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*Loftie's History of London.**

THE closing years of this century already establish their claim to be justly regarded as an age of biography and history. Amongst the compilations to which such a character is due may be ranked two or three works which came out during the past twelvemonth; for the essence of their history lies in their account of the lives and manners of men. We recently reviewed one of these; that of the Rev. J. Cave-Brown upon "Lambeth Palace and its Associations."† Another is Major Griffiths's "Chronicles of Newgate"; and another forms a notable contribution to a study which, for some forty years or more, has been almost neglected, since the new Topographical Society scarcely realises its founders' expectations. Of the ordinary hand-book or guide to London we assuredly have no lack. But relinquishing the seductive paths of personal anecdote and local gossip, Mr. Loftie enters upon a wider, albeit more difficult, field. He chooses for theme the making of London,—erroneously styled the capital,—when viewed as a centre of civic liberties and municipal administration. So great a subject cannot, of course, be exhausted in the two volumes before us. Where much is attempted not a little must remain unaccomplished. Yet let this be no dispraise to a masterly performance that has been undertaken alone, to researches prosecuted amongst records hitherto neglected or unknown. Moreover, the pending crisis in municipal affairs gives to Mr. Loftie's inquiries an exceptional interest which otherwise they might fail to arouse, and we can only hope that his undoubted success will induce him to treat as they deserve many topics,—as, for instance, conveyance, lighting, and commerce,—which he here but briefly discusses.

What, then, is London, and how came it where it is? To this opening and all-important question no better answer can be supplied than by reading as if they were a book,—and a book indeed they are to all who shall inspect them aright,—some of the excellent maps made for this work. Disregarding the fables, beloved by Leland, of Gildas and Geoffrey about Brutus and Troynovant, Kings Belin and Lud, we must thoroughly familiarise ourselves with the conception of an extensive lagoon, situated on this wise. Interspersed with marshes and dotted with islets, it lies eastwards and southwards of a peninsula which is washed by the waters that now flow in a more or less artificial channel between Richmond and Gravesend. Through the marsh land run the Brent, Hammersmith Creek, Eelbrook, and Counter's Creek, the West and Aye-bournes, the Fleet and Wall-brook, the many loops and branches of the Lea. From the nearer Surrey and Kentish Hills flow Beverley-brook, the Wandle, Falcon-brook, the Effra, the Raven's-bourne and its tributaries. For the name of one of these our author, we may observe, rejects the common derivation. "The Fleet," he says, "did not love [as did the Aye-bourne] to wander through open meadows, or go miles out of its way to avoid a hill. On the contrary, it seemed, wherever it came, to have made its mark as deep and indelible as it could, and its early name of Hole-bourne is easily explained when we find it running between banks so steep that in places they may be called cliffs." The little Wall-brook, having its source in the fens beyond Moor-fields, ran towards the end of its course between two hills, then less than 50 ft. above the water level, whereof the western was skirted by the Fleet, so long the bulwark of London on that side. With respect to the other hill, on the stream's left bank,—the hill that is undoubtedly the *omphalos* of the whole position,—Mr. Loftie says little or nothing to connect it with the supposed settlement there of the Trinobantes, or, and with more probability, of Kaswallon. He concedes, it is true, that here, if anywhere, there may have been an early British fort, and "here, long before the coming of the Romans, the old Celtic chieftain of the district may have placed his fortified cattle pen." Nevertheless, to this spot, long since buried "full fathom five," whether it be the Keltic Llyn-din (stronghold by the lake), or the Belgic Lun-den (fastness by the grove)—Claudius leads his legions.* Hither drawn by what Tacitus calls the *loci dulcedo* soon collected that large population whom Suetonius left to their fate at Boadicea's hands, inasmuch as the settlement had but slight military value. But in course of time arose Augusta, the favoured and honoured city, extending over the western hill to the high bluff by the Fleet. Around this, though not until within sixty years before their final withdrawal under Honorius (A.D. 410) to meet an enemy who threatened them nearer home, the Romans built the later and outer wall. This wall, could it be reproduced, would be found to enclose the 380 acres which, together with the Farringdon Without, Portsoken, and Bishopsgate Without Wards coincide with the City of to-day. We must refrain from following the author's highly-interesting disquisition upon the ancient roads that converged towards the City,—one from Chester to the broad shallows lying between Millbank and Stanegate, and so (following the Milky Way) on to Dover; another, branching from the Watling-street by the Marble Arch, trending to the ferry across the narrow but deep channel over against St. Mary Overey's. We hasten forward to what he terms one of the most awful episodes in our history, the repulse of the unprotected Britons by the heathen victors at Crayford. "We see the city surrounded by the invaders, and the hapless fugitives from the slaughter in the valley of the Cray crowding the gates. . . . . Augusta has made her very last appearance on the stage of history. What went on within the Roman walls after that fatal year, 457, we know not. There is silence everywhere, and it lasts for a century and a half. . . . . 'No territory,' remarks a great foreign historian [Lappenberg] 'ever passed so obscurely into the possession of an enemy as the north bank of the Thames.'" Barely has the seventh century begun and we find the Saxons in assured occupation. Persuaded by his wife Berctha, a king of Kent dedicates to St. Paul a Christian church on the summit of the western hill, with Mellitus, sent with Justus, bishop of Rochester, by Gregory to St. Augustine, as its first bishop. In what Beda already calls their "metropolis" Æthelberht establishes as king of the East Saxons his nephew, Sœghberht, to whom in turn is ascribed the great western Minster, which arose from amidst the brambles and thickets of Thorn-ey, *locus terribilis* (the venerable or awful, rather than terrible, spot) of Offa's earliest charter. Converted by St. Augustine's followers, the people relapse, during a dreadful plague, to Woden and Thor. They are reclaimed to the faith by the Saints Osyth and Æthelburgha,* together with him who gives his name to four churches at the gates,—Botolph, special saint of Eastern Anglia. Henceforward London ceases to be the capital of one Saxon kingdom. It is eagerly coveted

* "A History of London." By W. J. Loftie, B.A., F.S.A., author of "Round about London," "In and Out of London," &c. With Maps and Illustrations. In two volumes. London: Edward Stanford, 1884. [Second Edition.]

† See the *Builder*, vol. xliv., p. 165 (February 10th, 1838).

* Countless difficulties beset this question. Cæsar's *civitas Trinobantum* may be London, it may be St. Alban's. By the *firmissima civitas* of that tribe Norden understands this settlement. The piles discovered (1867) in London Wall and Southwark-street are held by General Pitt Rivers to indicate lacustrine dwellings here of a præ-Roman era. Dr. Guest and the late Rev. J. R. Green oppose the British town theory; whereas Mr. Kemble and Mr. T. Lewin, with others, uphold it. The river's mouth was much nearer to London than it is at present.

* St. Æthelburgha is yet a London parish, and Saint Osyth survives in that of St. Benet Shorehog, Sise a corruption of St. Osyth's) lane.

by that king of whichever kingdom is paramount in all England. Hither as to their own city retire the Danes after the truce they forced from Ælfred. The story of his contest for its possession is the story of his life. In the end the Londoners hold their own: they increase in numbers as in wealth. "At a later date there are many references to this good time of old, and the number of foreigners in London when the Conqueror came shows that the concourse of merchants still existed in spite of the Danes. During the century and a half which elapsed between the death of Alfred and the peaceful time of King Edward, London Wick and London Hithe, and London Street were crowded whenever London Bridge [dating with certainty from Eadgar] was open."

The Conquest completed the change in London as England's capital which had begun with the removal of St. Eadward to Westminster. Although our sovereigns down to the Stewart dynasty, when they had business in London, or when for that matter the Londoners had business with them, occupied the Tower, they made no permanent residence within the City. But from William's day she enters on a fresh life, commerce becomes her new source of greatness. With the Norman's charter to William, bishop, and Gosfreght, portreeve, and all the burghers within London, French and English, friendly, begins a long tale of documents like thereto, which step by step recovered from the Crown a quiet enjoyment of the true ancient liberty that has been the Teutonic ideal for so many centuries. The conqueror of England's grant to the citizens was confirmatory, nay, conciliatory in tone. As "law-worthy" they were to enjoy freemen's privileges in courts of justice; inconsistently with feudalism, or tenancy in demesne, they are to inherit the property of their fathers. His son Henry goes further; his grants are twofold, being in the nature of remissions and gifts. Thus Mr. Loftie leads the way to his chapters upon the struggle for liberty, the rise of the companies, the wards, and the companies themselves. Nor do we think we wrongly surmise that, setting aside awhile its more purely local or topographical annals, it is by this part of his labours that our author would have his merits estimated and appraised. In saying that "the London election of Stephen shows plainly the increasing influence of the citizens in public affairs," he sounds the ground-tone of his story. Stanch to the monarch of their choice, we have to consider the Londoners in their attitude towards the Angevin kings. Under Henry Fitz-Aylwin, their first mayor, we find them chosen objects of the Lion-hearted's politic designs; they obtain the condemnation of that Bishop of Ely, Longchamp, who would have strengthened the Tower, which Mr. Loftie aptly styles the padlock of the chain of defence, to their harm. The siege and capture in St. Mary-le-Bow Church of Fitz-Osbert, William of the Long-beard, gained him over 50,000 adherents. Richard defines their rights in the matter of the Conservancy of the Thames; and at Runnymede they secure a special clause in the Great Charter. King Henry III. triumphed for a short period in making grants in Middlesex to the abbot of the Minster, whose rebuilding he had in hand.* But he soon had to cope on this question, as on others, with Thomas Fitz-Thomas, choice of the "plebeian" citizens, and appositely designated the Simon de Montford of London. He it was who had courage to tell his sovereign that so long as he would be a good lord and king, they would be faithful and duteous to him; legalising the existence of the novel trade guilds, he overthrew the old oligarchy of the churls, who, in Henry III.'s words, called themselves barons. "When the craft guilds became powerful enough to control the election of the City officers, the old system was about to die. Its work was done, but it died hard. By the end of the fourteenth century it was gone."

In tracing the rise of the City companies it is needful to bear in mind how some long established families of the aristocratic side once reigned supreme in certain districts, giving original names to the wards into which those districts developed. Thus in Bassishaw and Castle Baynard were settled the patrician Basings and Hadstocks; the Farringdons in the two now wards of that title; the Beckets, from Rouen, and the Bukerels, from Italy, on the northern and southern sides of Chepe; the Frowyks in Chepe itself; the Covyntres in Vintry; the De Blakethornes in Aldersgate; the Pountneys on the eastern hill site of the ancient Roman fort. To these properties under aldermen, who at first were the heads of their respective families, were subsequently added, but by no means easily, certain Sokes or Liberties,—such as Cornhill, a former soke of the bishop, and Portsoken appertaining to the Cnighten guild without Aldgate. These powerful houses opposed strenuous obstruction from within, but at length succumbed, and finally disappeared altogether before the progressive march of the bonded craftsmen. The earliest guilds were different in kind, some being religious, some social; the most important were mercantile. Having head-quarters in the "town guild" at the Guildhall, they directed or strove to direct the whole policy of the City. To Walter Hervey, succeeding Fitz-Thomas as champion of popular rights, is due the later united resistance of the handicrafts-men to the oligarchial action of the town guild. Our author demonstrates how it was he "who, more than any one else, prepared the way for the Whittingtons, the Larges, the Greshams, the Beckfords of later generations, and who set the ancient liberties of London on a foundation so secure that they remain practically what they were after the lapse of half a millennium." He fairly complains of the oblivion in which is left the memory of one who, first to recognise the importance of the handicrafts, substituted companies for guilds, and made them future rulers of the municipal commonwealth. Since we know of Hervey as granting numerous enfranchisements which were afterwards impounded and declared illegal, we should not forget that it was by Royal charters, commencing even with that of Henry I. to the Weavers, that the traders acquired exclusiveness and monopoly for the exercise of their respective crafts and misteries.* Before his death, 1377, King Edward III., himself member of the Linen-armourers (not necessarily armour-makers, though now combined with the Braziers), had granted charters to eight of the twelve principal City guilds. "The companies included in every case the greater merchants. The most eminent members of the City governing body,—the aldermen,—joined them, and in a very few years they were able not only to control trade, but also to control the corporation."

It were manifestly impossible to more than very rapidly pursue on the lines of this volume the citizens' fortunes during the golden prime of the three Lancastrian kings. One of the last public acts of the last Plantagenet sovereign was to make Whittington mayor on Adam Bamme's death in his year of office. The career of the mercer apprentice, so vividly recounted by Mr. Besant and his late coadjutor, Mr. Rice, is one of the most fascinating in civic annals. Yet it possesses a deeper significance in evincing how it had become possible for one who owed little to his antecedents, and nothing to the favour of the great, to raise himself, as has been repeatedly done since, to the highest place in popular esteem within the City. To this day certain endowments testify to the public munificence of him who magnanimously cancelled his sovereign's debt; many leading members of the existing peerage trace the foundation of their houses to fellow-citizens of Richard Whittington. The share taken by Londoners in the contests for the crown culminated in their bestowing it upon King Edward IV. The very day on which Stockton, mayor, the sheriffs and aldermen, amongst them the famous John Crosby, with a great multitude, met him at Islington, there died in the oratory of the Wakefield Tower the ill-fated monarch whom the citizens had helped to defeat at Barnet, and who some fifty years before had been carried in his mother's arms to kneel amongst them, for the first time, by the altar before Erkenwald's shrine at St. Paul's. Those who would read of the London cœval with him that, above all others, gives us immortal pictures of the many-sided events and scenes which have passed in its limits may turn with profit to the chapter entitled "Shakspeare's London," a subject fraught with interest to the student, whether he be historian, antiquary, or architect. The after chronicles of the civil war, the plague, and the fire form prelude to a few observations upon the labours and genius of one man, who, had he been left alone, would have done so much more, but who did do so much to beautify and reconstruct London as known to later generations.

The second volume deals mainly with the suburbs. By that term we are to understand so much of what, for want of a more accurate description, we must call the metropolitan area as lies beyond the City strictly so called. This division, whilst not at first clearly obvious, and offering temptation to somewhat discursive writing, is so far convenient for Mr. Loftie's purpose. Besides it has the additional advantage of separating the more valuable portion of his work from a good deal which, by the nature of the case, has been told before. Under these circumstances we may be pardoned for not dwelling thereon at any length. At the same time we would particularly notice what he says concerning the manors of Holborn and Neyte, the Berkeley, Grosvenor, and Tyssen estates, with the manors of Lylleston and Islington. These, with kindred topographical details, remind us of the maps and drawings prepared by Mr. Stanford, and which so largely enhance the interest of the letterpress. Some of them reproduce originals that are familiar to frequenters of our national collections, but are little known to the ordinary reader. One or two are from J. Rocque's work (1763); another, of the Marylebone estate as bought by the Duke of Newcastle in the year 1708, is from private sources; another graphically shows the booths and standing marts as they probably clustered around Chepe six or seven hundred centuries ago. Striking too are those illustrating Stepney Manor, the gradual growth of London, the channels of the northern streams, the Benedictine Abbey at Westminster, and London of the thirteenth century.* That of the Minster is very good, being due to the researches of Mr. J. H. Middleton, F.S.A., and Mr. Micklethwaite. There should be noticed the Abbey Mill (over a tributary of the Aye-bourne), the Calberge and Guest Hall,—in Dean's-yard; the infirmary chapel, east of the little cloisters; the prison, now the school entrance; and the Misericorde, over which stands Ashburnham House, but of which, together with the Privy Dorter or Necessarium, many traces were revealed last winter at the demolition of the late Dr. Turle's Tudor house.† The map of the northern water-courses is so important that we wish it were done to a larger scale, and included the streams westwards of the West-bourne. As it is, some vanished localities might have been marked, such as Kilburn Wells, the Nine Acres where the West-bourne crossed the Harrow-road at the green, Coalbrook-dale in Bayswater-road, the Neat Houses, and Five Fields at the King's Scholars' Pond. One source of the Aye at Hampstead might have been denoted as Shepherd's Well (now we believe in the garden of Conduit House, Fitzjohn-avenue); neither Avery-row nor Cowford by the Stone bridge at Brook-shott is shown; and we think this stream should appear as passing before, not beneath, Buckingham Palace. So similarly

* At the end of the eleventh century the greater part of the county,—the king having no single manor therein,—was in the hands of the Church.

* We may here point out that the word "mestera" or "mestier" (compare the French, *métier*; Italian, *mestrier*; Provençal, *mestrier* and *meisteir*; Spanish and Portuguese, *mester*) is a corruption of the Latin *ministerium*, "a serving to," and not of *mysterium* "a secret." The oldest mistery is that of the Saddlers, but precedence has always been yielded to the Mercers, the *homines de Misteriæ Civitatis Merceræ London*. The charter of the Carpenters, the Confraternity of Surveyors and Builders,—one of the first to own a Hall of their own,—bears date July 7, 1477. Company is purely a modern term.

* In this plan we observe a slight inaccuracy. The church at the south-western corner of Threadneedle-street should be marked St. Benet Fink, and not St. Martin Outwich, which latter also appears in its proper place.

† See the *Builder*, vol. xlii., p. 38 (January 14, 1882), and vol. xliv. p. 225 (Feb. 17, 1883).

with the Fleet. The West-bourne, in fact, formed the western boundary of the Bishop of London's Paddington estate, and of St. George's parish; the Aye-bourne that of the City and Liberties of Westminster, which by Eadgar's charter of A.D. 951 originally lay between this stream on the west, Oxford-street and Holborn (Stratford-place to Farringdon-street) on the north, the Fleet along Farringdon and Bridge streets on the east, and the Thames (Blackfriars Bridge to Aylesford-street, Pimlico) on the south. We may conclude in expressing our cordial concurrence with Mr. Loftie's strictures upon the ill-advised changes that have been made throughout London, and particularly of late years at the Tower; seeing what has been done in the latter quarter, and hearing what it is yet proposed to do,* we tremble with apprehension for the so-called restoration between the Salt and Wakefield Towers along the inner ward.

The weak part of Mr. Loftie's work is where he goes into architectural criticism on his own account. Here he seems to have no rule or guide except a general belief in the impeccability of Wren, and in the beauty and fitness of what he speaks of as the "so-called Queen Anne style." The Kensington Vestry-hall is a failure, the Vestry "having unfortunately refused a Queen Anne design." The statements may both be true, but their logical relation may be questioned. Like other writers, Mr. Loftie can point out the unsuitability of the Greek imitations in St. Pancras, or the unpractical character of the high shallow Ionic portico at the British Museum, which shelters no one; this is all easy enough now that Mr. Fergusson and some other writers have shown the way. A critic who cannot see anything in Somerset House, and thinks the Adelphi front (because, we presume, it belongs to the sacred period) much superior, is hardly worth serious consideration in regard to this part of the subject. We are glad to observe that one absurd mistake, whereby Wilkins was credited with the design of the great building of the Classic revival, St. George's Hall at Liverpool (Mr. Loftie having apparently never heard of Elmes), has been corrected in the second edition. But Mr. Loftie has no "dry light" on London architecture to give his readers; only the special prejudices of the set of opinions which he and a certain circle of architects and *dilettanti* have adopted; and where he is right in his architectural judgments, it seems rather by accident than in the following out of any logical principle of architectural thought or criticism.

THE CONTEST BEWEEN THE LABOURER AND THE STEAM-ENGINE.

THE services rendered to civilisation by the steam-engine, in the first century of its existence, are so important and so manifest, that it is very likely that many of us who regard the extension of steam-power to every department of industry as a mere question of time should forget that there is, after all, another side of the question. To a very large class, moreover, that other side is the most obvious, and the most objectionable. The means of expressing their views as to their own interests are less available to this class of persons than to those who, enjoying to the full the benefits secured by the use of heat as a motive power, are disposed to overlook the constantly-recurring friction between the remains of the former *régime*, and the progress of change.

In no department of industry has the conflict between human and mechanical motor power been more pronounced than in the operations of the builder. Yet how many among the rising generation of architects can remember the conditions of a strife which was carried on by a numerous series of strikes? A man must number more years than he is anxious to count who remembers very distinctly the long lines of Irish labourers that were seen crawling up a long series of ladders, each man laden with his hod, where any great building was in progress. The substitution of a steam-winch for this rude form of human toil was one of the most obvious improvements at the disposal of the builder. It promised at once to effect a considerable economy in the cost of local transport, and to relieve the workman from a very hard, and not a little dangerous, toil. But how sturdily was the innovation resisted by the vested interest of the hod-men! It is doubtful how long their opposition might have prevailed, in the case of the ordinary builder, but for the appearance on the scene of the railway contractor. In 1835 the railway contractor employed the hod-men. The use of a barrow for conveying bricks, stone, and mortar on to a heavy work, such as a bridge, was the first innovation. Then the laden barrow was hitched on to the end of a rope, and hoisted by a winch. Then the winch was turned by steam. If memory does not deceive us, the works of the Thames Embankment were among the first on which the organised use of "donkey engines," and appliances specially designed for the delivery of materials to the hand of the bricklayer or mason, was in regular swing.

But with the increase of economy, safety, and speed, attendant on the use of the steam hoist, has coincided the disappearance of the Irish hod-man. In the great depletion of thirty-eight per cent., which has taken place between 1841 and 1881 in Ireland, the loss of the earnings of the bricklayers' labourers, as well as of those of the harvest labourers, also ousted by mechanical improvements, forms an element not to be overlooked. The greater good of all may well be the result of the utilisation of coal, rather than corn, as the force-yielding combustible; but the process of substitution can not go on without the infliction of personal suffering. So it was, in the fifteenth century, when the art of the printer first impoverished the craft of the copyist. So was it, not much more than a generation back, when the nightly skies of Staffordshire and the adjoining counties were reddened by the fires of the destroyers of machinery, and when the Bull ring at Birmingham was occupied by armed and mounted troops. So, to some extent, it is on the introduction of any great substitute for human labour.

To a certain extent, no doubt, this conflict between man and the steam-engine is unavoidable. We may be loth to leave the dispossessed human labourer to suffer by the change; but it is more easy to lament his lot than to obviate the cause of suffering. And the very energy of private enterprise, to which our industrial growth is to so great an extent due, is opposed to those attempts at introducing some compensation for his disestablishment, to which the labourer is apt to think he has a rightfnl claim. Without offering any suggestion as to this thorny element of mechanical progress, we may remark that the true theory of mechanical improvement is not such a substitution of steam power for man power as shall lead to the starvation of the ousted labourer. What the national welfare demands of the engineer or of the capitalist is, that just in proportion to the degree in which the burden of heavy animal toil is removed from the shoulders of the working man, the time which he thus saves shall be devoted to toil that is at the same time lighter, more skilled, and more remunerative. Wherever this is the case society is the gainer, as a whole, and that not at the expense of any particular class of its members. Where, in the long run, this is not the case, the real advance in national welfare is more than questionable.

The contrast between the Old World and the New is, perhaps, more marked in respect to the mode in which human labour is affected by the introduction of mechanical power than in any other respect. It is by no means surprising that this should be the case. In an old and settled country the grooves in which various classes move are deep and decided. Throw the man out of his groove, and in nine cases out of ten you throw him on charity or on the parish. In new and partly-peopled countries the case is reversed. No one, as a rule, is educated so exclusively, or perhaps so thoroughly, for a given career in the United States, as in parts of the Old World. But so much the more ready is every one to turn his hand to whatever offers. And the large area of unoccupied land affords a safety-valve for the increase of urban population unfitted for urban life, which is wanting in the Old World. The difference in this respect is roughly measured by the flow of emigration.

There is, however, another mode of measuring the uncompensated displacement of man by the steam-engine. It is a mode of which the outcome is somewhat startling, and such as to demand the serious consideration of any one deserving the title of a statesman. We refer to the comparative growth of mechanical power and of full occupation. To some extent we can measure the national growth in wealth. Is its growth in welfare coincident? Year after year we add so much to our steam power. Does that addition coincide with the rise of the labourer in the scale, or with the squeezing him under the track of the steam-car?

Two sources of statistical information have, within the past day or two, become available by way of furnishing a reply to this question. The replies, it must be added, are accordant. It cannot be said that they are satisfactory. The classified Census of 1881 shows a decline in the numbers of every class of industrial workers in active occupation. This decline is coincident with a large increase in the application of mechanical power, as measured by the home consumption of coal. And this latter increase, in its turn, is so far distanced by the annual increase in the United States, measured in the same way, as to give room for very serious reflection.

Thus when we find that during the last ten years agricultural labourers have decreased by a million,—making all allowance for greater precision in the later than in the earlier returns,—we have to bear in mind the fact that the great advance made in labour-saving machinery, for ploughing, harvesting, and all the services of the agriculturist, marches step by step with the fact that the land supports fewer and fewer mouths from year to year. To some extent, it will be said, this is due to the substitution of pastoral for agricultural industry. But when we come to the actual figures, we do not find them to be very reassuring. Taking Great Britain alone,—for Ireland tells the same story in much larger letters,—there were 800,000 fewer acres under corn crops in 1881 than in 1871; 200,000 fewer acres under green crops; 25,000 fewer under "other crops"; 20,000 fewer under orchards; and, *per contra*, 2,000,000 more under permanent pasture. But with this latter increase, which is such as to make the whole cultivated area in 1881 larger by 1,400,000 acres than that of 1871, there is only an increase of 674,000 cattle, balanced by a decrease of 2,540,000 sheep. Labour-saving machinery, therefore, has been a far more efficient cause of loss of work for the agricultural labourer than change in the kind of culture can have been.

Again, the numbers of miners in tin, lead, iron, and copper are greatly reduced. So are workers in wool, silk, and lace, boot-makers and straw-plaiters. In short, making allowance as desired by the Registrar-General for the exclusion of those before returned as "indefinite," out of 23,000,000 of souls in 1871, 14,000,000 were returned as having some definite occupation, while there are not more than 12,000,000 out of 26,000,000 so returned in 1881.

Now, if we turn to the main source of mechanical power, coal, and deduct the coal exported from the quantity won, we find an increase of 26 per cent. in the quantity annually retained for our own consumption in the decade. It is not easy to state with accurracy how much of the 135,000,000 tons thus returned in 1881 was used for domestic purposes, for transport, and for manufactures of a chemical nature. But allow what we may for the items, the increase in steam power, as indicated by the increase in the home consumption of coal, must have been prodigious; and the figures show that it has had the effect of displacing, rather than of facilitating, labour.

Now let us turn to the United States. We

* See also *Builder*, vol. xliii., p. 644 (November 18, 1882), and vol. xliv., p. 662 (May 19, 1883).

have not at hand the return for 1871, but take the decade 1870-1880 to compare with our own decade 1871-1881. The coal yield of the United States in 1880 was very nearly double that of 1870, the figures being 33·3 million tons for the earlier year, and 65·3 million tons for the later, a growth of 20 per cent. per annum, pretty nearly, against our own 2½ per cent. per annum. Nor does this great gain measure the elastic vigour of the American collieries. The 65·3 millions of tons of 1880 have grown to 85·3 millions in 1882. This is equal to the coal production of the United Kingdom between 1862 and 1863. In another ten years, if things go on as at present, the United States will produce more coal than the United Kingdom.

To complete the parallel it would be necessary to have a classified census of the occupations in the United States, to compare with that of the United Kingdom. Meanwhile we have three elements out of four. We can compare the increase of mechanical power, among ourselves, with the decrease of human industry. Reduced to figures (subject to correction for inaccuracy of returns) we find that an increase at the rate of about 2½ per cent. per annum in steam-power, coincides with a decrease at almost exactly the same rate (allowing for increase of population, and decline in occupied persons) in human industry. No doubt the nation is richer for the change, in the ratio of the difference in the profit on steam-power and on human labour. But how about the workers? An ugly hint as to this is given by the statement that while 12,000,000*l.* were expended for relief of the poor in England and Wales in 1871, 14,400,000*l.* were so expended in 1881, an increase at the rate of 20 per cent. in ten years, or double that of the population.

The growth of mechanical power, as measured by consumption of coal, in the United States and in the United Kingdom in a decade, has been 96 per cent. in the former, and in the latter 26 per cent. And in the latter the number of emigrants in 1881 was more than 50 per cent. greater than that in 1871,—the respective numbers being (after deduction of immigrants) 198,608 in the earlier year, and 305,409 in the later. The latter figure is hard upon that of the annual increase in the population of the United Kingdom, which was 340,118 per annum for the last decade. That is to say, that for every two souls of annual increase, nearly one had to seek his living abroad. While we have not the same minute knowledge of the population of the United States, we yet are aware that coincidently with their increase of 9½ per cent. per annum in the source of mechanical power, they are annually receiving from foreign countries a large number of fresh workers.

If it be asked, What is the good of all this study, we have no specific nostrum to propose. But to all those who have to do with the march of industry, and who can rise to a somewhat higher standpoint than that of the ledger balance for the year, the above facts will prove of startling interest. As to that, indeed, they have affected the ledger balances of 1883. How will they affect those of 1890, or of 1900?

SOME EARLY SPECIFICATIONS AND CONTRACTS OF MASTER-WORKMEN.

Notwithstanding the assertions of some unprofessional writers who have favoured the world with their views on architectural matters, plans and specifications must have been more or less in use from the earliest times in the construction of all great civil and ecclesiastical buildings. Even in respect to ordinary edifices, except those of the most simple and commonplace character, a plan and directions were indispensable for the proper carrying out of the work. Although we can reconstruct the plans of many of our ecclesiastical buildings and castles of the Middle Ages, even from the outline of their ruins, yet it would be a great pleasure to architects and others if some discovery of MS. materials placed them in possession of a number of the original plans and specifications of these buildings. Much conjecture has existed for long years in respect to the nature of the preliminary plans of our early ecclesiastical edifices, and whether in most instances ecclesiastics supplied them, or master masons, as distinct from the practitioners of the clerical order. We have historical evidence enough of certain distinguished prelates, and other dignitaries, founding cathedrals, and of their names being associated with these and other buildings as the architects thereof, but we sorely lack that precise information which a modern architect's plan and specification furnishes us. It is, in fact, absurd to think that any one of the ecclesiastical buildings of the Middle Ages was commenced without a clearly defined plan. Our present inability to produce plans from the collections of home and foreign archives, can be explained from more than one cause, and principally when we remember the wanton and widespread destruction of documents that took place at the time of the suppression of the monastic orders. We contend that the system that now obtains in respect to planning a building must have, more or less, always obtained, with this difference, that the practitioners were different and the routine that is now recognised had not developed, because each age gave rise to new wants and modifications in the practice of every profession. In the Middle Ages we had many ecclesiastics well versed in drawing and the principles of architecture, and we had also many master workmen, or craftsmen-architects, who knew their craft both theoretically and practically. The master-masons who worked in large numbers on our early Gothic edifices were, in the first instance, no doubt, foreign craftsmen to a great extent; but, as time advanced, the native workmen completely absorbed the foreign element, and became so strong and independent that they formed themselves into recognised guilds of trade. The old term "journeyman" suggests much, for whenever an abbey or other large ecclesiastical building was contemplated our early masons and other building craftsmen migrated thereto. There has been much conjecture over the word Freemason, but it is quite certain that it was often used apart from the Masonic Society bearing that distinctive name. Whether the word "Freemason" was derived from that of freestone mason, seeing that the great majority of our ecclesiastical buildings, their decorated work particularly, were composed of an easily-worked lime or free stone, we cannot say, although the matter is suggestive. Again a free mason or other free workman would go to prove a privilege in early days, as contradistinguished from other workmen, who were rather bondsmen, or obliged to work at the will of their feudal lords and masters. As in ancient Rome so in Mediæval England, architects and master workmen were under heavy responsibilities to plan and execute good work, as we shall show presently. The architects in ancient Rome, it is stated, were obliged to warrant their private buildings for ten years, and their public ones for fifteen. Every accident arising from bad construction during these periods was to be made good by them or their heirs; and if they were unable to make the necessary repairs, they were whipped, shaved, and banished. We have a significant saying recorded of Martial, in reference to the architectural profession. A friend having consulted him on the employment to which he should put his son, "Don't make him a poet or an orator," says he; "he will more quickly learn to play on the lyre or flute, and thereby enrich himself. But if the young man is dull and heavy, make him an architect." Are we to argue from this that even from an early age the practice of architecture was calculated to ripen the wits of a dull young man, and make him soon "look alive"? Whatever may have been the exact sentiments of the Romans on the adoption of architecture as a profession, we know that in the present day, particularly since the era when dishonest competitions were ushered in, aspiring and respectable young architects have had good reasons afforded to them for evidencing a sharpness in their wits.

But to return. Apart from ecclesiastical buildings and castles, the carpenters in the Middle Ages in the British Islands were the chief constructors of houses, the domestic dwellings of the people being generally of wood. An early and very interesting specification for building a house comes down to us in the civic records of London of the 2 Edward II., 1308. One Simon de Canterbury, a carpenter, came before the mayor and aldermen and agreed that he would make, at "his own proper charges, down to the locks, for William de Hanigtone, pelterer [skinner], before the Feast of Easter [from Martinmas], a hall and a room, with a chimney [*camino*], and one larder between the said room, and one sollar over the room and larder; also one oriole at the end of the hall beyond the high bench, and one step with an oriole from the ground to the door of the hall aforesaid, outside of that hall; and two enclosures as cellars opposite each other beneath the hall, and one enclosure for a sewer with two pipes leading to the said sewer, and one stable, in length [not stated] between the said hall and the old kitchen, and 12 ft. in width, with a sollar above such stable and a garret above the sollar aforesaid, and at one end of such sollar there is to be a kitchen with a chimney, and there is to be an oriole between the said hall and the old chamber, 8 ft. in width." The above specification requires a little explanation in respect to some terms used. The term "sollar" may mean a sun parlour or upper room. According to "Parker's Glossary," in Mediæval houses the sollar was usually situated behind the dais, separated from it by the end of the hall, and had a cellar under it. These two stories together were frequently not so high as the hall, leaving the gable of the lofty roof with the window in it far above them. This, says our authority, was the lord's chamber, and there was generally a small opening from the sollar into the hall, from which the lord could overlook the proceedings and hear all that passed. The oriole first-named in the specification was very likely a recess with a bay-window, the second-named oriole possibly a kind of porch, and the last-named may mean a room with bay-windows.

In the English Mediæval castles, or at least in some of them, adjoining to the great chamber were oratories, and these were lighted by a large embowed or bay-window, called an oriole or oriel. Old Lydgate, describing a lady, writes,—

> "In her oryall there she was
> Closyed well with royall glas."

The estimate or sum that Simon de Canterbury was to receive for his work was "9*l.* 5s. 4d. sterling, half a hundred of eastern marten skins, fur for a woman's hood, and fur for a robe for him, the said Simon," &c. Money must have had a great purchasing value in the commencement of the fourteenth century, but the carpenter master-workman was condescending enough to take kind as well as money from the wealthy City pelterer. As the house was nearly all of timber, the interval between Martinmas and Easter gave ample time for its completion.

In some of the agreements between the master-workmen and their ecclesiastical and lordly patrons in the Middle Ages, many of the terms are so obscure or obsolete in respect to workmanship that their import can be barely conjectured. Probably not a few of the technical terms used were provincial or local, and not generally understood over the country. In the agreement between the Commissioners of Richard, Duke of York, and W. Horwood, free mason, for the building of the chapel in the college of Fotheringhay, the latter stipulates in severely-binding terms: "To yield up hys body to prison at my lord's wyll, and all his moveable goods," in case of non-performance; and further: "he shall neyther sett mor nor fewer freemasons, roghsetters, ne leys thereupon but as shall be ordeigned." The duke was to find all materials, "ropes, bolts, scaffolds, gynnes, &cc., and all other werke that longyth to such a body, nave, isles [aisles], &cc."

In the earlier periods of the Gothic style, it would appear from certain pessages in the annals of some of our ecclesiastical establish-

ments, that the members of the orders and the monks took a more active part in the planning and execution of the works than at a later date, even in sundry instances working at the masonic craft with their own hands. As Gothic architecture developed, and passed into the richly Decorated and the Late Perpendicular florid periods, the responsibility of much of the work executed devolved upon the master-workmen employed. In the short era that culminated in what is known as fan-vaulting, master-masons of great repute bound themselves in stringent terms to complete their work in a stipulated time for stated sums. The names of a few of these great master-masons have reached us, and their memories deserve to live. In connexion with the vaulting at St. George's Chapel, Windsor; the choir of Winchester; Henry VII.'s Chapel, Westminster; and King's College Chapel, Cambridge, there is exquisite work, and with the most of it certain master-masons' names occur, as if they were the head of their profession at the time. In respect to the work at King's College Chapel, there is an indenture, dated 1513, by which J. Wastell and Henry Severick engage to finish the vaulting in three years, to be paid 1200*l.*, 100*l.* for each severy upon its completion, "and so from tyme to tyme until all the twelve severeys be fully and parfytly made and performed." The names of John Hylmer and William Vertue, free masons, are associated with the work at St. George's Chapel. They undertook the roof of the choir for 700*l.* in 1506, and bound themselves to complete it before Christmas, 1508. On the chapels and halls of All Souls and Magdalene, Oxford, worked three skilful master-masons,—John Druel and Roger Keys, on the former, and William Orchyarde on the latter. They were employed by Chicheley and Wayneflete, who endeavoured with some success to follow the great examples in Gothic set them by Wykeham. Some of the superb vaulted work on which Wastell and Severick were engaged at the close of Henry VII.'s reign was finished in the succeeding reign, but it was not long until a pelting storm of destruction swept over the land under the *régime* of Henry VIII., and the practice of a glorious style of architecture perished almost out of sight, save in debased forms. In an indenture by Henry VIII. to J. Wastell and Henry Severick, it states:—"The vaulting to be sett up after the best handlying and forme of good workmanship according to the plat [plan] thereof, made and signed by the hands of the lords executors of the will of Henry VII." In an indenture of the 5th of Henry VIII. to J. Wastell, the vaulting of two porches and seven chapels is put down at 20*l.* each, and there was a binding in 400*l.* penalty, and to keep forty freemasons "continuallie working on the same." The building workmen of the period to which we are alluding could not work and leave off when they liked, and they were held responsible for bad conduct and workmanship. The following items show the subordination of the masons to their masters:—"And in case any mason or other labourer shall be found unprofytable, or any of such yll demeanour, whereby the werke should be hindered or the company misordered, not dooing their dutyes, &c., then the said surveyor to endeavor himself to perfourm them by such wayes as hath byn there used before this tyme." Henry VII. has been accused of excessive avarice, but we find him engaged during the whole of his reign in magnificent architectural works at both Windsor and Westminster, and providing in his will ample means for the completion of the work at Kings' College, Cambridge. Although marvels in stone vaulting justly excite our admiration, we have several splendid examples of open timber roofing in this country, which go to prove that our master workmen of the carpenters' craft were not inferior in geometrical knowledge and constructive skill to their masonic brethren of the building art.

The conditions that obtained in architectural practice and construction in the fourteenth, fifteenth, and sixteenth centuries are not possible now, but there is no reason why the public spirit and love of art that inspired great founders, architects, and building workmen of old should not be evoked again for the credit of the State and the common weal.

NOTES.

The new street from King William-street to the Tower was formally opened on Friday, last week, by a small party of those officially, or otherwise directly interested in the matter, including Sir E. Watkin, M.P., and the representatives of various railway companies, the Chairman of the Commissioners of Sewers, &c. The street has been made at the cost of the Metropolitan and District Railways, the Commissioners of Sewers, and the Metropolitan Board of Works. According to a newspaper report, it was generally admitted that a wide and excellent street had been secured, "and one which would tend, to some extent, to alleviate the congested traffic of the neighbourhood." This sentence is an example of that curious and innocent superstition which crops up every now and then in reference to Metropolitan improvements, that, to "relieve congested traffic," it is only necessary to make a new street in contact with the point of "congestion." It does not seem to occur to many people to consider whether the operation of the said street will be to take traffic away from or to bring traffic up to, the point of pressure. The pressure at the neighbourhood referred to is mainly owing to the convergence of several crowded streets upon the access to London Bridge, and this is to be "relieved" by bringing yet another thoroughfare to meet the others at the same point, at the cost of a million and a quarter. That part of the traffic which wishes to go from that point to the Tower will, no doubt, be benefited, but what proportion is that of the whole?

It is with unfeigned regret, for more reasons than one, that we record the fact that the Royal Academy, at their general meeting on Wednesday last, not only again ignored the claims of Mr. Alfred Hunt to such distinction as associateship in their body may be supposed to confer, but, as if the more to mark the slight, elected a landscape-painter who, to say the least, had no claims to the compliment in any way commensurate with those of the highly-gifted and sensitive man of genius whom they refuse to adopt. Mr. Colin Hunter, the new Associate, is a mannerist with a somewhat novel and powerful style, and that is all. The contrast between his and Mr. Hunt's claims might be effectively shown even by the juxtaposition of two pictures in last year's Academy, the "North-country Stream" with its finished and delicate study of every portion of the scene, and the "Pebbled Shore" of the new A.R.A., with waves in parallel ridges of something that looked hard and frozen, as if one could step over it but for the uncomfortable walking on such sharp edges. But how would it be if Mr. Colin Hunter's pictures were collected in one room, as Mr. Hunt's are now? Such an experiment would prove tolerably convincing, we suspect. Mr. Hunt can afford to wait, perhaps. We are not so sure that the Academy can. In the matter of landscape, they seem bent on stultifying themselves.

From a report under heading "Continental Notes," in another column, it would appear that, to a certain extent, the thoughts and suggestions on the subject of dwellings of the poor, which are so much tossed about among ourselves at present, are being repeated in a kind of parallel column in Paris, leading to conclusions similar, in great measure, to those which we have advocated. The general tendency of the meeting on the subject at the Académie des Sciences Morales et Politiques was towards preferring private action to State interference, condemning the hasty demolition of habitations without making provision to replace them, and emphasising the importance of the moral improvement of the lower orders, as in the long run the most certain means of elevating their condition. The factor of educational improvement, without which the moral and hygienic improvement is hardly possible, seems somehow to have dropped out of the minds of the French philanthropists.

The long list of accidents during the recent gale affords disagreeably practical hints as to the vexed subject of wind pressure. Among the accidents are two very similar and unusual ones, cases in which pedestrians were blown off their feet and under the wheels of vehicles; one case, that of a man who was blown down in front of a tramcar while crossing High-street, Whitechapel, resulting in very serious injury. A horse and van crossing Blackfriars-bridge were turned over on the road. A similar accident at Portsmouth cost the driver his life, the cart being blown over on him; and other cases of the same kind are reported, fortunately without loss of life. We should like to have more definite information about the report of a railway engine-driver, mentioned in some of the daily papers, to the effect that his engine was at times "nearly brought to a standstill" by the force of the wind, and that when caught by a side wind there was some danger of some of the carriages being blown off the rails. That of course must have been by overturning, which would sooner happen than the lifting of the flange over the rail, at all events. But that the wind could really operate so forcibly upon the comparatively narrow area of the front of an engine as to overcome its weight, momentum, and mechanical power to such a degree as the report would indicate, seems rather problematical. The question has, of course, some bearing on the causes of the too memorable calamity of the Tay Bridge.

A circular announcing the impending appearance of a new English dictionary, which has been in preparation "for a quarter of a century," accompanied by a specimen page of the work, threatens an eclipse of Walker and the other worthies who have grappled with the English language. The new dictionary is edited by Dr. Murray, President of the Philological Society, and numbers some brilliant names among its contributors; though, as the preparations of a quarter of a century have not got farther than the promise of a Part I., taking us from "A" to "Ant," most of us may fear that we shall have gone a good deal farther than that before the end of the work appears. The specimen page, however, indicates that the dictionary, if carried through on the same lines, may be a storehouse of valuable information for our great-grandchildren, if they should have any bookshelves large enough to hold it. The intention seems to be to elucidate the entire scientific history of each word; indeed, the matter under the head "alum" might be supposed to come out of a chemical dictionary. There are, we may suggest, a host of words connected with art and architecture which may afford ample scope for the learning and ingenuity of the contributors.

One of those pleasant little jokes which occasionally enliven the dull history of architectural competitions reaches us from a certain town in Yorkshire, where there has been an exciting struggle among the local architects for the commission for a proposed new Board School, the cost of which was not to exceed 1,000*l.*, on which sum the successful architect was to receive three per cent. Much spirit and energy seems to have been evoked in the struggle for this prize, and when three sets of drawings were at last selected, out of the number sent in by aspiring candidates for fame, it was found, "to the great surprise of the committee" (extraordinary how committees continue to be surprised on such occasions) that all three designs were by the same firm. Our own surprise, and that of most people who have any regard for the dignity of the architectural profession, would not be that all the three selected designs should be "found to be" by one favoured firm, so much as that any firm should take the trouble to send in three designs for the purpose of hooking so small, insignificant, and unrespectable a bait. The history of architectural competitions repeats itself a good

deal, but it does not usually repeat itself quite as much as this.

A CORRESPONDENT from Hammersmith calls our attention to a recent decision of one of the magistrates of that district, Mr. Shiel, to the effect that "a way 8 ft. wide may have buildings erected alongside of it because it is an old way." A summons, it appears, was taken out under Sections 25 and 26 Vict., cap. 102, which is to the effect that "No existing road, passage, or way being of less width than 40 ft. shall be hereafter formed or laid out for building as a street for the purposes of a carriage-traffic unless such road or way be widened to the full extent of 40 ft., or for the purposes of foot traffic only unless such passage or way be widened to the full width of 20 ft." The reading of the Act seems to our perhaps not legally constituted mind conclusive in favour of the necessity of widening the road, and preserving, as our correspondent says, "rivers and reservoirs of air" amid a district where building is rapidly increasing; otherwise, what does the phrase "existing road" mean? If Mr. Shiel can make out his reading to be good law, so much the worse for the law. There can be no doubt that it is bad sanitation.

THERE seems to have been a sort of "Belt case" going on at New York, in which ancient, instead of modern, statues were concerned. The *casus belli* was the genuine or fallacious character of the numerous statues and pieces of statues brought by General Cesnola from Cyprus, and which our unenlightened Government allowed to pass over the waters to the enlightenment of the American mind. A Mr. Feuardent, apparently gifted with an impulsive character answering to his rather alarming name, has been asserting for three years back that General Cesnola's collection of statues was "a fraudulent patchwork of unrelated parts." These be very bitter words, certainly, and it is no wonder that General Cesnola should have been moved to declaring that Mr. Feuardent's statements were "malicious"; an opinion which had some ground in the fact that the latter had been much chagrined by having lectured on a small figure in the collection under the impression it represented "Hope," whereas, when put into a bath and well scoured, the figure came out, in the opinion of experts, as "Venus." On the other hand, it certainly seems that General Cesnola, or his acolytes, had been guilty of grave indiscretions. In order to get the collection into the best "form" for a public inspection, somewhat hasty inferences seem to have been drawn; the legs of Hercules were put on wrong, and a broken dove in the hand of a Venus statue was supplied with a wooden tail and covered with whitewash. General Cesnola, no doubt, was personally innocent of these well-meant attempts at restoration, but, like a candidate accused of bribery, he has had to be reponsible for his agents. From a patriotic point of view, however, it is disappointing to find that the last few weeks have rehabilitated "Cesnola among the broken gods" in the eyes of the æsthetes of New York, and we cannot flatter ourselves that we have escaped being taken in by refusing to purchase the collection. A correspondent of the *Times* tells us that the trial was a very dull affair, except at the moments when this or that statue or part of a statue was unveiled for inspection; but he anticipates that there will be a revival of interest when "the stalwart Mr. Bangs" and "the keen Mr. Choate" declaim for the plaintiff and defendant respectively. The opinion of Mr. Bangs and Mr. Choate on the authenticity of ancient Cypriote sculpture will, no doubt, be of much value, and we shall look with interest for this promised lesson in archæology.

THE Manchester Ship Canal Bill passed the Examiners for the Standing Orders Committee on the 24th of January, and will thus come before the Committee some six weeks earlier in the session than was the case last year. In addition to this good start, the promoters have this year supplied several important defects in the first Bill. A sum of 1,390,000*l.* is provided for the improvements in the estuary required in order to insure a navigable channel from Manchester to the sea. An equal sum is alloted for the construction of docks and warehouses at Manchester and at Warrington. Upwards of 16,000*l.* is allowed for the construction of roads from the docks to Manchester and Salford, and water entrance to Manchester is also designed. These points were omitted in the first Bill. A lift is also shown in the plans to provide for the crossing of the Bridgwater Canal over the ship canal at Barton, the site of the famous aqueduct, by Brindley, which has already been widened twice since its first construction. The total estimate for the enterprise now stands at 6,904,000*l.*

SKETCHES AND STUDIES IN SPAIN.

LOGROÑO.—NAVARRE.

SPAIN, although one of the oldest and most interesting of European countries, is yet one of the least studied and generally known. Exceptions made of the Alhambra, Sevilla, Cordoba, and the cathedrals of Burgos, Toledo, and some others, it would not be so very far wrong to say that Spain is an unknown country. Notwithstanding the labours of Ford, Prescott, Street, and the sketches of Washington Irving and Longfellow, the student comes across evidence every day of the wealth of materials still unworked. When we reflect that cities, such as Malaga and Cadiz, are among the oldest in Europe (we are here speaking of their existence as cities, not of their actual walls); that the Phœnicians had colonies in Spain 3,000 years ago; and that the Basque race, like the language, is, probably, the oldest to be found throughout the Continent, a feeling of surprise is natural on finding its antiquities and art remains so little generally known.

At Roccadillo, on an eminence favourably situated at the north end of Gibraltar Bay, not only are still found remains of a Roman amphitheatre, but likewise the walls of a citadel, referred by Ford to the Phœnicians. Walls of like character are to be found in Ronda (Andalusia) and in Estella (Navarre).

The foundation of Ronda is referred by the above authority to the Moors, but that opinion seems at variance with the facts. The whole aspect of this ancient city, its walls, gates, and the bricks of which it is built, are all evidently Roman. The Arabs merely altered and added to the pre-existing Roman city. Finally, the ancient walls, yet seen in the citadel, seem to date back its foundations long before the Romans came to Spain.

Looking now towards the north, we may call attention to the Ebro Valley about Logroño, as full of interest, geologically and historically. Those peculiar mounds, occasionally,—as in the case of Aosta, in Italy,—reaching to mountains and called *moraines*, abound on every side, indicating the action of far-extending glaciers in ages long ago. Beneath one of these mounds, not far away from the forenamed city, flows the Ebro, and the constant action of its waters during ages unknown has worn away the clay, drift, and hard conglomerate rock, so as to leave exposed a precipitous face of reddish cliff. The summit has been fortified, and remains of an ancient city are there found. According to tradition, followed by some writers and preserved in the name of the place, this is the site of ancient Cantabria, capital of the province so-called. Logroño (Lucronium) is Latin, the general opinion being that its site,—on the opposite or right bank of the Ebro,—is the same as that of Julio-Briga.

Logrono once possessed a goodly share of Gothic fanes, dating, like most of the finest examples of that style, from the thirteenth century. These have been so much changed and disfigured by Renaissance additions, as not only to destroy the original fine effect, but so also as to render their history and parentage difficult to trace. Among the most lamentable effects of the Renaissance phase in Spain was that of loading the interior of churches with heavy, incongruous choirs, often seen in the very middle of the edifice, with a passage from the high altar railed off for the use of the choristers. The Logrono churches have suffered greatly in this respect, especially so Santa Maria de la Redonda, which, notwithstanding the height of its nave and aisles, appears deformed, on account probably of its *coro* and *trascoro* (or semicircle of chapels behind the choir, and at its west end) having been carved out of the original stately Gothic fane. Santiago has suffered less than the Redonda, due to the fact that its original thirteenth-century character has been more respected. Santa Maria del Palacio still boasts a Mediæval spire and one side of a thirteenth-century cloister. The interior of the church exhibits a characteristic study. From the doorway an *atrium* behind the Renaissance choir, with openings into the aisles, leads to the cloister before mentioned. From this *atrium* you see Romanesque, Gothic, and Renaissance mingled together in a strange medley. It is thus apparent that the twelfth century created the original church; then came the thirteenth, with its influence, resulting apparently in a rebuilding or enlargement of the original; the fourteenth added some arches and ornaments; until, at last, came the Renaissance, bringing in its overweighted domes, piers, and masonry, and so throwing a cloud over the once peerless beauty of the Mediæval temple.

Before we pass on to another province, we may express our regret at the recent inconsiderate destruction of a valuable monument,—in some respects the most valuable Logrono contained,—the ancient stone bridge of the twelfth and thirteenth centuries. Owing to some dilapidations in the half furthest from the city, it was determined to sweep away the Mediæval structure, replacing it by another with arches of wider span. This resolution would not have been so regrettable were it not that the old bridge, with its castellated turrets and embattled parapet, had been the scene, on more than one occasion, of memorable feats of arms against the French. Hence it has figured upon the shield of the city's arms since the days of Charles V. The original round-arch bridge of the twelfth century had been widened, strengthened by massive angular buttresses, and in part replaced by pointed arches in the next century, and so in some measure deserved preservation, apart from its historical memories, redounding so much to the city's glory.

Navarre contains Mediæval remains of great interest. Its capital, Pamplona, owns several fine churches, the cathedral being, as to its interior, one of the most pleasing, and its Gothic of the purest, we have so far come across in Spain. On the day of our visit we saw carried out of the cathedral pillars and other portions of an altar, exactly in the style of the ivory diptychs of the fourth and fifth centuries.

But the ruined Cistercian Monastery of Iranza, some six miles northwest of Estella, situated in the depths of a retired and sombre valley, contains remains of extreme beauty, hardly excelled by the finest Gothic works of more northern lands. Here, too, we meet with Romanesque, in process of developing into Gothic. "Round-arch Gothic," one was tempted to call it, in the style of Mr. Fergusson. However, the illusion was of short duration; the round arch evidently belonged to the work of one century, the Gothic to that of another. After all, then, it is Mr. Ruskin who wins the palm, and Round-arch architecture is Romanesque, while Pointed is Gothic. At Iranza the ruined cloisters are the chief attraction. The delicacy of the window tracery and the carved capitals we never remember to have seen surpassed. Our chief delight was that of meeting with Gothic of so pure a type, so far south as Spanish Navarre.

Estella itself is eminently interesting from every point of view. Nestling in a crescent-shaped valley, and fortified by mountains on every side, its naturally strong position doubtless attracted settlers from time immemorial. To the eye of the artist or the poet, the charms of the vivid impressions produced by its deeply-indented mountain outlines, contrasting with the verdure of the crescent below, bounded by the winding Ega, must prove irresistible. To the student of Mediæval art its attractions could hardly be surpassed. In the Middle Ages Estella and its vicinity were remarkable for religious foundations. Some of these we now proceed to study.

We commence with the ruined Convent of Santo Domingo. This was one of the magnificent edifices which the piety of the Middle Ages spread abroad in all Catholic lands. To give an idea of the splendour of its proportions, it may be mentioned that the refectory measured some 130 ft. long; the convent church, 160 ft.; and that the ruins include a third grand division in two stories, on the

west side, starting for the north-west angle, probably devoted to the use of novices.

The style is fully-developed Gothic of the thirteenth century, though the slender pillars of the western doorway, seem almost to point to a later development. There is a tomb in the Decorated style on the north side of the church, with a mutilated statue of a patroness beneath the richly-worked canopy; and another, on the same side, of a father prior: both abandoned to neglect, mutilation, desecration. The Gothic seen in the lofty arches, windows, and doorways is pure and noble in sentiment, though the delicacy in detail is less striking than at Iranza.

The situation of Santo Domingo on the steep side of the line of metamorphic cliffs to the east and south-east of Estella is very advantageous. A feeling of regret came over the mind on viewing the beautiful chapter-house desecrated and ruined, gigantic ivy filling up the apertures of its elegant trefoiled windows, the geometric forms *sawed up* by modern ignorance and avarice.

Immediately below Santo Domingo, and seeming almost part of its appurtenances is San Sepulcro, the walls of which, part of an exterior arch, and remains of round pillars, with also two ancient statues outside (dating from about the tenth century) are all Romanesque, while the façade towards the street is Gothic of the thirteenth century. The doorway is the finest, most deeply-recessed, and purest Gothic portal in Estella. It consists of six pairs of slender shafts on either side, a string of angels crowning the point of the arch. In the *tympanum* are subjects in relief in three tiers, the Crucifixion in the topmost; hell, flanked by a scene from the Resurrection, in the middle; and oracles, or figures in supplication, below. On each side of the doorway, and high in the façade, are figures of the apostles beneath Gothic canopies, all in the style of the time. The interior presents nothing of special interest, the general sentiment is Romanesque, with modern alterations and additions.

Our illustration shows a view of the Calle del Mercado, Logroño, in the strong sunlight and contrasting shadows of a southern clime. Its leading feature is the south side and towers of Santa Maria de la Redonda. The walls and clearstory as far west as the porch are Gothic, and the remainder evidently later, apparently belonging to the seventeenth and eighteenth period. The upper portions of the towers, or spires, if we may call them so, like many others seen in Spain, present a mixture of styles,—Byzantine, Arabic, and Gothic,—confused together in that peculiar medley found only in the period of the Renaissance. There is, indeed, a faint resemblance to the real Gothic spire and pinnacles in the distant view, otherwise it might seem hard to say what Gothic had to do with these spires, savouring rather of Rococo and Churriguera. However, the height seems to show that the beauty of Gothic form had not been entirely absent from the mind of the designer.

Santa Maria de la Redonda is in process of being converted into the cathedral of the diocese, and since onr illustration was taken the works have begun. Instead of lengthening the original ground-plan, in the style of the thirteenth century, we are informed that the additions have been planned in the style of the Renaissance.

BUILDING RISKS AND THEIR INCIDENCE.*

ALL building works involve risks:—Risks to builders; risks to employers.

The risks usually considered to attach to builders are:—Changes in price of labour, enforced at times by strikes; alteration in the efficiency of labour; changes in price of materials; the difficulties arising from having to obtain special materials in place of those usually procurable; the state of the bottom obtainable for building, and the consequent extent of the foundations of the proposed structure; the use of materials from the estate, such as bricks, stone, timber, and the value of them for the purpose of the erection; the state of the adjoining premises as affected by the proposed works, and the condition and value of the old materials which may have to be re-used; risk of irregularity of payments, and the failure of the employer; penalty as to time of completion; risk of accident to the public and to workmen employed; the idiosyncrasies of architects, as shown in their explanations of their own terms; the unexpected views of the intentions of the Legislature by the administrators of Acts of Parliament; the whims of clerks of works; the danger of inaccuracies in the estimates.

The risks usually considered to attach to employers are:—Excess in cost over the contemplated expenditure; delay in completion beyond the anticipated period, occasioned by strikes, tempest, frost, or other inclement weather, and other causes, and the possible want of occupation for the building in consequence of such delay, involving sometimes the loss of anticipated business; delays and difficulties from the failure of the builder; defects in workmanship and material, after all precautions taken; in case of the employment of an architect strange to the locality, his non-acquaintance with local customs and materials.

Though these several risks may be divided into two classes they are originally all those of the employer; he engages an architect to minimise them for him. Some of them he can get rid of, others remain. If he throws on the builder unreasonable risks (sporting items in the bill of quantities), he must pay heavily for getting rid of them.

There are cases in which risks can be transmitted, and others where they must be retained. Whoever draws up a reasonable contract will not endeavour to throw unreasonable risks on to the builder. The experience of builders varies as to what they will undertake as risks, and difficulties are sure to exist if builders undertake risks with the bearing of which they are unacquainted.

Before considering the relative advantages of different modes of contracting, some observations are here offered on the mode of dealing with the several risks above mentioned.

The risks as to variations in prices and efficiency of ordinary labour and materials should lie with the builder.

The employment of "other tradesmen," specially named by the employer or architect, for portions of the work, introduces fresh difficulties for builders, and makes it almost impossible to carry out the works by the intended date of completion, as such tradesmen are not usually bound to time in the same manner as the general contractor, and the latter has not usually the power of making a free contract with them.

The extent of foundation required is usually a risk retained by the employer. It is often possible to obtain extra accommodation from additional foundations, which is to the employer's advantage. It is sometimes almost impossible to execute works in foundations which, in the first instance, it seemed reasonable to propose.

The works to adjoining premises, including party-walls, are invariably attended with risks which generally should be retained, but must sometimes be transferred. The liability occasionally arising to rebuild, instead of repairing, a party-wall, and the expenses in consequence, including that of removal, to the adjoining owners, may be so greatly varied in execution, that the possibility of transferring the risk to the builder by any usual clause is more than doubtful.

The amount of the penalty inserted in a contract for delay in the completion of the works should be based on some equitable principle, and should be commensurate with the loss from non-occupation. This may be calculated, as interest on money expended, in some cases on buildings only, in others on buildings and site, and there are cases where the value of expected trade may be introduced, but, in the latter case, it would seem reasonable that it be mentioned in the contract.

The time allowed for additional works should be allowed in case of variations, on the whole amount altered or reconsidered, and cannot practically be calculated on the value of net extra cost alone.

The present increased actual value of land, and the increased proportion which the value of the site now bears to the total cost of town buildings of which it forms a part (and which value has to be considered in many instances in calculating the amount of penalty), has led to haste in the conduct of the work, to throwing points of detail over until the time comes for their execution, and to the drawings and specification being incomplete and really insufficient either for estimating or for carrying out the works.

Such being risks attendant on the erection of most buildings, there are cases in which employers increase their risks by the course of their proceedings. A public body erecting a building of a new sort increases the risks by introducing the element of an architectural competition for the design, and by stating a fixed sum as the principal guiding element in the conduct of the works.

Another case is that where there is a contract for an entire work, with the rates applicable by special clauses to future variations, and where risk of complication is introduced by every separate private bargain made in the course of the works either by the architect or by the employer with the builder.

Such agreements are most difficult to interpret, and, even if clearly defined, introduce two separate systems of settling a value for the same work.

Another element of risk is introduced by changes in the plan or in the class of work to be used, made after the receipt of the tenders and before the contract is signed; such changes, if considerable, complicate the accounts and are most difficult of statement in revising the drawings and specification.

Reasonable care may make quantities and specification hang together if written continuously, but it is doubted if it is possible so to alter a specification for a large and complicated building, which has been accurate at first, as that it shall be correct after considerable variations shall have been introduced.

And here may be considered that element of professional responsibility which is so generally introduced in the conduct of works, and which should result in the proper distribution of risks between the employer, the architect, the surveyor, and the builder.

An employer building on his own estate employs his own men and materials. If erecting a new building, he takes all risks himself, and those risks are the least possible in quantity. If altering an old building, the risks are greater, the uncertainty as to time to be occupied by the works is increased, the cost of the works is greater, and the difficulty of subletting portions or trades, if the proprietor is disposed to do so, is increased.

If a building is erected in a town, there are the further risks of dealing with adjoining properties and with public authorities. These require special knowledge, and builders are to be found who will take these risks as an ordinary business, and also the responsibility of the working up the whole into a complete house or building, such responsibility being expressed by the laws relating to contract for the production of a complete chattel.

If the employer requires special architectural design, an architect is employed, who is the agent of the employer, and is responsible to bring larger knowledge of dealing with risks to bear on each a subject than either the employer or the builder may possess. In arranging a contract under such circumstances, the cost of materials and labour is to be supposed to some extent to be known by all parties, and a profit is added to cover the risks which cannot be particularised, and for the reward of the builder.

Employers, and with reason, generally doubt the expediency of placing a contract in the hands of a builder without competition, hence the system of tendering; and, were the specification always clear, and no sporting risks introduced, each builder tendering would prepare his own estimate; but the multiplication of these more difficult risks, and the want of exactness in defining them, are some of the reasons for the introduction of an intermediate person who himself takes the risk of the quantities, and furnishes them, as far as they can be accurately measured, and whose business it is to point out the nature of all sporting risks which may be contingent on the contract.

It is very difficult to define some of these risks, as it is difficult to define the modes of construction intended to be adopted, and when severe competition is introduced it becomes at some time a question what is to be considered the contract with reference to such matters. What the architect intended to express may not be the fair meaning of the words he used, and so his intention may not be the explanation of the contract.

Upon the fair rendering in the quantities of the terms stated by the architect depends, most

* A paper read at the ordinary general meeting of the Surveyors' Institution, on Monday evening last, by Mr. T. M. Rickman, Fellow of the Institution.

ikely, whether or no the builders tendering take sufficient pains to ascertain beforehand what these risks are.

If all of the risks are not stated in the specification, except under general headings, if all of them are not ascertained by the measuring surveyor in preparing the quantities, it would seem questionable whether the builder who contracts for the work is responsible for such risks so omitted, and, if not, it would seem that they are still on the shoulders of the building-owner.

Reviewing the history of the course of business, we find:—*First.* The architect employed by the building-owner, employing workmen; all risks being at the cost of the employer. *Second.* The architect and builder combined, with or without contract, the employer, by selection of an architect, devolving on him, as he might think, all risks, but in that probably mistaken *Third.* The employment of an architect, and under him of contractors for separate trades or of a builder for all trades. Both parties recognised by the employer, with larger chance that all the risks should be transferred from the employer, but with a probability that some of them may reach him after all. *Fourth.* The introduction of a quantity-taker,—either unrecognised by the architect or employer; or recognised by the architect, not by the employer; or recognised by the employer; or appointed by the employer,—with a further complication in the three last cases, not unfrequently introduced, by the fact of the architect being the quantity-taker.

In each of the above-mentioned cases, more or less of the risks are become the responsibilities of the several parties engaged by the building-owner; but if any one of them, architect, quantity-taker, or builder, has not done his duty in preparing the contract and the estimate therefrom, and, as is also possible, if the employer has not assisted as he ought, such neglected work may make a sore place in settling up the accounts, and the employer may find himself still involved in risks which he thought to have transferred.

A knowledge of the relative positions occupied by these several parties is gradually reaching the class of persons who are likely to build. There are many among them who are desirous of shirking their true position, but those who have had experience (or who have still more fortunately obtained their experience from others) are becoming aware that the nominal shifting of all responsibility from off the shoulders of the employer on the subject of open questions or undefinable risks, is not a course which will secure for him the execution of the work for a fixed sum, without chance of excess or further trouble; nor does it secure the entire avoidance of questions which may have to be referred.

We are now more in a position to consider the relative advantages of different modes of contracting and the employment therein of the various professional persons usually engaged, with the extent of devolution of risks accompanying each. Those to which attention is here called are as follow: — (A.) Daywork prices for labour and materials. (B.) A fixed sum for the whole, obtained from the builder, without the intervention of a surveyor. (C.) A fixed sum for the whole, obtained by quantities furnished, priced or unpriced, by a surveyor. (D.) Measure and value on a schedule. The schedule priced by builder on tender. The schedule priced by surveyor and tendered at a percentage on or off. (E.) An agreed percentage on prime cost.

The principal point to which attention is called is the question as to which of the above courses distributes the risks before mentioned most equitably.

(A.) *The Employment of a Contractor who charges by Daywork for Labour and Materials at agreed Prices or at Current Rates.*—The risks of alteration in price of labour, and, to some extent, in the efficiency of labour, and the risk of alteration in the price of materials, are in this case on the builder, and, if payments are regular, all other risks remain on the employer. There are many cases in which the changes possible in the cost of labour and materials are the most important risks, and the only ones which can be taken off the employer's hands. Many large accounts for repairs must be thus treated, and the accounts for works are so treated at times when the employer and builder are equally acquainted with construction, and when the employer is his own clerk of works.

(B.) *A Fixed Sum for the Whole, obtained Direct from the Builder.*—All the risks which I have given as the builder's are supposed to be transferred to him under this arrangement, but the extent of the employer's risks will depend upon the carefulness with which the specification has been drawn, which means a sufficient examination into the various questions by the employer or his architect beforehand. In default of this sufficient examination, the following risks will practically remain on the employer:—Foundations; adjoining premises; some public requirements, and the difficulty of obtaining special materials; besides others, which, if not fully considered, may become the subject of a reference.

The employer's risks which this course is intended to pass on to the builder are,—excess in cost, delay in completion, and class of workmanship. The extent to which this is really effected depends again on the specification and sufficient preliminary inquiries; in fact, on the reasonableness of the specification.

Special attention has been called to the necessity of preliminary investigation, because on it depends practically the extent of contingencies which have to be provided for. A builder may insert a sum for all such things as he has not taken the trouble to measure or inquire into, but that is not business, and it is a course which a measuring-surveyor cannot adopt. The object of competition is to avoid the existence of such an item, and to obtain, at lowest market price, a specified combination of recognised marketable materials. Engineers and architects preparing their own quantities may insert a provisional item of 10 per cent. to cover their carelessness, but the result of such an item must be, if disputed, to throw the whole contract open to a careful remeasurement.

(C.) *A Fixed Sum for the Whole, obtained from Quantities furnished by a Measuring Surveyor.*—It is not intended here to discuss the various positions occasionally taken by the measuring-surveyor, and the variations in extent of the authority which consequently attaches to his quantities. Whether he is a builder's clerk, a builder who has relinquished his original business, an architect's clerk, an architect who has relinquished, or is prepared to relinquish, his original business, or a trained assistant to an expert,—any of these may be his origin. His appointment may come from some only of the builders, from all the builders, with or without touting, from the architect, from the client. There are risks that he may do injustice to the builder, to the architect, to the client. His fees may be allowed fairly, including or not including responsibility for errors, though they may be inserted at a very high rate, and the architect may mulct him in various ways; or the client may cut down his charges till they are insufficient for producing effective quantities. He may prepare them on speculation or with a limited guarantee. In many of the above cases there arises a special risk that his work be not well and fairly done. The conclusion to be drawn is that upon the position in which the measuring-surveyor is placed and the independence of his examination of all risks, intended to be devolved from the employer to the builder, depends the effect of the contract as regards the transfer of those risks.

When the quantities furnished from the information at the disposal of the builder are prepared with sufficient care, such a contract as is now under consideration gives the builder the following risks:—

Alteration in price and efficiency of labour.
Responsibility to complete by a fixed time under a penalty.

The risks connected with adjoining buildings, old materials, use of estate materials, and of special tradesmen's work, are reduced to a minimum, but still probably remain on the employer.

The risks as to regularity of payments, as to the idiosyncrasies of the architect and of the clerk of works, are taken by the builder, and the accuracy of the quantities is either taken by the measuring-surveyor or not, according as it has been arranged that he should be paid.

Of those risks which I have termed employer's risks, means are herein taken to reduce those of excess of cost and of delay in completion. The quality of the work depends on the builder selected.

One important element in the effectual transfer of many of the risks enumerated, is careful settlement beforehand of what is intended to be done. In some cases this is possible, and for this purpose the adoption of the system of a contract with the assistance of quantities is the proper course.

If it be objected that the careful consideration here pointed out is no business of the surveyor, but is altogether that of the architect, the natural reply is, that in the proper view of the case, this careful consideration, this endeavour to eliminate questionable risks, and to clear up questions which might lead to misunderstanding in the course of the work, and consequent contention, is one of the *raisons d'être* of the surveyor's position; that if he maintains this he will maintain the standing of the measuring-surveyor, as a professional man; and if he lets go of this position, and allows, knowingly or carelessly, any question to remain not cleared up, which a little care or careful interrogation on his part at the right moment might clear up, then he becomes part of a class whose one-sided and close-sailing evidence has brought much obloquy on the profession.

A class of cases has now to be considered where it is not possible to fix beforehand the extent or nature of the buildings which it is intended to erect.

(D.) *Measure and Value on a Schedule.*—In such cases the ordinary course is to arrange that the work executed shall be measured and valued at an agreed schedule. The changes in the incidence of building risks in this case from the last-mentioned are as follow:—

It is very difficult to fix a time for the completion of the work. The questions of adjoining buildings, old materials, use of estate materials, remain with the employer almost entirely, and, in fact, the risks are much the same as in the case of the employment of a contractor at daywork prices, except that the efficiency of labour rests more completely on the builder.

The first point which requires attention in the working of a schedule, as contrasted with that of a tender on quantities, is this:—

In a tender on quantities a contractor can arrange beforehand for his materials in the cheapest market and at the proper time for the conduct of the building, whereas in the case of a schedule he cannot make this calculation; his tender on a schedule is, therefore, likely to be higher than on quantities for the same work. There are, however, two ways by which this difference between the systems is occasionally reduced in execution. In the case of a contract it sometimes happens that an architect exercises the power of changing materials in the course of construction, and keeping parts of the building in abeyance to such an extent that a builder cannot take any advantage of the condition of the markets,—a point which is against the builder under a contract; and in some cases, where works are executed at a schedule, a fair idea may be obtained at first as to the extent and nature of materials required,—a point which is in favour of a builder under a schedule.

The next point of difference to be noticed is that of comparative closeness of measurement.

The accuracy of quantities depends on the time allowed for their preparation, and on the care exhibited in the drawings furnished. The custom of furnishing such details as may be relied upon by the surveyor for preparing really accurate quantities, and by the builder for the execution of the work, only survives in cases so few and exceptional that it may almost be left out of consideration. It is an article of faith that such a custom once existed.

Probably it will be near the mark to state that in very careful quantities, taken from general drawings only, there is an excess of one-half to one per cent. (and there ought not to be more), and that there are various labours taken which a builder tendering will consider either not imperative or included in the general description of the work, to the extent of possibly one per cent., but not exceeding that on the whole value of the work. These points are commonly discounted by the successful tenderer. In the case of measurement the excess may be considered as occurring at about the same extent, though it is likely to occur in different items from those which are likely to show excess in quantities; moreover, all labours and only those which are executed are paid for. These points are also discounted in the case of tenders on a schedule. The cost of measurement may be taken as one per cent. more than the cost of quantities, but the cost of measurement of variations is saved, so there is

very little actual difference in this respect to the employer.

There are two modes of pricing a schedule in use:—1. The presentation to the builders tendering of a blank schedule, comprising the principal items likely to be required, and the delivery by each of a priced copy, such competitive schedules requiring very careful comparison by means of a supposititious bill of quantities. 2. The presentation to the builders tendering of a schedule already priced out by a surveyor, and the delivery by each of a tender, at so much per cent. above or below the surveyor's prices, and, as variations of this arrangement, may be added the use of a published official or trade price-book.

The objection to the first is, that a large amount of special trouble is thrown on the builders tendering, who, to some extent, work in the dark, and the prices sent in are likely to vary very much in rate of profit in the several trades, and an endeavour is fostered on the part of the builder or employer to manipulate the work so as for one of them to gain an advantage over the other.

The production of an original suitable schedule, carefully priced out according to the exigencies of any special case by a surveyor, is a very difficult affair, and one seldom carried out. The second case commonly degenerates into the use of a recognised price-book or public schedule, to which objection may generally be taken, that the public schedule is inapplicable to the special circumstances, and is commonly of old date, and that the price-book is based on assumed prime costs, and its application implies a re-examination of all prime costs. In fact, there will generally be much guess-work, and therein an additional cost to those concerned, which, in a cutting business (such as building) will needs end in the employer suffering in some way.

Another point to be considered is that in building works, both contract and schedule, the circumstances of the case often vary so much from those contemplated by both parties at the commencement, that in fairness, for more or less of the work executed, the builder is entitled to be paid at different rates from those first contemplated; and these changes involve so much consideration that, on a reference, and occasionally as a mode of avoiding litigation, the actual prime cost to the builder has to be ascertained as a basis for the fair payment for the work. This brings us to

(E.) *An Agreement to allow the Builder a fixed Percentage on his Prime Cost.*—In this case it is recognised that the various risks are on the shoulders of the employer, but, instead of endeavouring to pass off many risks which he cannot control, and making his interest antagonistic to that of the builder, thus adding another to those he may have to fight in the course of his building operations, the employer faces the risk of an account prepared by the builder, with or without supervision, and trusts to obtaining in exchange the best efforts of the builder in economising time, in which the builder is especially interested, as well as in the economical use of materials and labour.

Such an agreement implies that the employer is one who erects buildings as a business, and that the builder is one who carries out buildings in a known and efficient manner. It applies that there is no intention on either side to *best* one another. It is, therefore, usually accompanied by mutual knowledge of the two parties.

In such cases the preliminary questions which always require special consideration and settlement beforehand include superintendence, and the use of plant and establishment charges The terms of agreement usually involve the charging of certain items specifically, and the charge of a percentage made up of two items,—one for establishment charges, and one for profit.

It need hardly be said that these percentages must vary very much with the class of work required, and with the position and extent of work intended, and also with the position which the builder may hold in the class of tradesmen.

In the above notes it has been endeavoured to treat the subject from a surveyor's point of view. Let it not be supposed that it is wished to underrate the necessity for an architect. The business of the measuring-surveyor is a branch of architecture not conveniently carried on by the same person who is engaged in designing, and the opinion should be emphasised that one of the greatest risks which an employer ever runs, and one which, if he does run, he may thank himself for, is that of endeavouring to carry out building operations without the assistance of an architect. One principal purpose of the employment of an architect is to see that a result is obtained commensurate with the means employed, but this result is not measured by cubic contents of building alone, but by convenience, suitability, and representative character, all of them other words for true economy. Under general circumstances, these requirements can only be obtained by the employment of an architect, who is responsible professionally for the result. He must be treated as an adviser and confidant, not as a servant or contractor.

Some of the difficulties have been mentioned which may be placed in the way of a contractor or of an employer from having an architect of insufficient experience, or of unwillingness to learn; but such faults are to be found both in builders and employers, and dealing with human nature involves risks overcome only by experience and by the habit of acquiring information.

CONTINENTAL NOTES.

IN a recent meeting of the Académie des Sciences Morales et Politiques, an interesting discussion was held on that burning question of modern existence, the dwellings of the poor, a discussion raised by the presentation by M. Picot of two pamphlets on the subject by Dr. Du Mesnil. M. Picot, after referring to the dreadful condition of the Paris poor, and the absolute need for steps being taken to remedy their deplorable existence, warmly advocated our English system of building societies, which, though not unknown in France, have met with none of that favour which is so marked a feature of their spread in this country. M. Léon Say drew the attention of his *confrères* to the necessity for the action of private initiative, which is encouraged by such societies, while at the same time advocating some appeal to the State. M. Leroy-Beaulieu, the eminent political economist, stated it as his belief that the increase of the population of Paris was not indefinite; the influx of recent years was largely due to unwholesome speculation. In such movements the State had small influence, and consequently any appeal to its active interference was unwise. The position in France was to some extent like that in England, and it had of late attracted no small attention on the part of the large land-owners. In referring to the building societies existing in Paris, M. Beaulieu not unjustly complained that they had so far only aided the class of smaller *employés* and *rentiers*, and it was necessary to touch a deeper stratum of the population. In the eminent economist's opinion the remedy lies in a series of reforms in what he terms "general hygiene." Private individuals must abstain from excessive building and the erection of too sumptuous dwellings; the State and municipality must lessen certain taxes, and not, as they too frequently do, relieve them in one quarter to increase them in another; all dues must be removed from building materials if cheap houses for the poor are to be provided; and, as a final source of relief, rent, he advises, should be made payable fortnightly, or even monthly. M. Passy very properly dwelt on the iniquity of demolishing whole neighbourhoods without supplying more adequate accommodation for those expropriated, and the discussion was closed after some interesting remarks from M. Jules Simon on the necessity for further action on the part of the public. Science had, so far, worked wonders in this direction of hygienic improvement; but an equally powerful factor for good was an improved tone of morality, which should go hand-in-hand with the advance of science.

It is interesting to compare with this discussion, in which most of the views of the case are approached, a letter by M. Laporte, published in the current number of the *Revue Occidentale*, and which, dealing with the efforts of those who, in Paris, are the advocates of the Haussmannic demolition of the old city, very justly urges some consideration being paid to branches of commerce which are in as suffering a condition as the building trade, and which are not, like it, so especially favoured by municipal legislation. M. Laporte, while temperate, expresses his sense of injustice at the partiality shown to the building trade in Paris by the constant demolition of whole neighbourhoods and their re-erection with a view to keeping the people employed. He not unfairly urges that it is the expenses entailed by this continued action of the municipality which raise the rates, and dispersing and ejecting the original occupants for more prosperous tenants, increase the cost of existence by the necessity for travel from considerable distances. The system, he further claims, offers a premium on unfair claims for compensation, and consequently increases the greed of the landlords who annually raise the rent.

LORD BRAMWELL ON MR. GEORGE.

IT may be doubted if Mr. George has not reached the acme of notoriety, and, like many agitators who have for a time obtained an undue amount of attention, he will probably soon cease, by the force of familiarity alone, even to attract. For the English people of to-day resemble the Athenians of old,—they are ever ready to throng to any place where a new doctrine in a striking form, or an old one in a new dress, is placed before them in an attractive shape. And there can be little doubt that much of Mr. George's celebrity, if it can be so called, arises not from the soundness of his doctrines, but because they are placed before the world in an attractive shape, with a great deal of force, and because they touch on subjects which are of interest to most Englishmen. When sensible people can in large numbers get excited about an elephant called Jumbo, and about another because he is piebald, it is wholly impossible that a social and economical phenomenon like Mr. George should not likewise have his day of attention. Mr. George's economical fallacies have already been destroyed by able men like Mr. Fawcett and Mr. Shaw-Lefevre, and now Lord Bramwell has joined in the fray. It may be said that if Mr. George writes and talks nonsense, why should eminent men waste their time in refuting his doctrines? But, unfortunately, a great many people do not think for themselves, and others are not very capable of clear and consecutive reasoning, and such are apt to be led away for a time by striking fallacies such as Mr. George enunciates. It is advisable, therefore, that he should be enabled to do as little harm as possible, and the best way in a country like ours to effect this object is for men with capacity and time to refute him with his own weapons of book and speech. Therefore, there can be no doubt that Lord Bramwell, by the publication of this pamphlet,* is doing good service to the community. To criticise what is in itself but a criticism of another work is a very unprofitable proceeding, and as Lord Bramwell's pamphlet may be purchased for the sum of twopence, we shall leave criticism to those who may read it. But it may not be out of place to note some of the most trenchant passages in this publication.

Mr. George's great theory is that the land belongs to every inhabitant in the country; that separate property is not to be justified; and that every owner of the smallest parcel of ground should have his property taken from him, and that it should become the property of the State without the present owner receiving one farthing of compensation. The simple reason why this naked doctrine of pure robbery, and this doctrine of common property, which the experience of every civilised community and the common feelings of mankind show to be absurd, has had any attractiveness for the multitude, arises, no doubt, partly from the manner in which Mr. George appeals to the feelings of the people. It is very easy to stir up a kind of sympathy with the pauper, and to raise a cry against the rich man, by showing the misery of the one and the luxury of the other, and then to draw a false conclusion from unsound reasoning, which is overlooked in the wave of sympathy for the poor and struggling which is produced by a little eloquent writing. But see the result of Mr. George's principles. "A man," says Lord Bramwell, "labours and saves, acquires a piece of land, perhaps taken in payment of a bad debt, dies with the comforting belief he has provided for his widow and orphans. Mr. George calls it 'justice' to confiscate it. Another man has been a member of a building society, and built his house, and believed it was his own; but Mr. George would charge him a heavy rent for the land on which it

* Nationalisation of Land: a Review of Mr. George's "Progress and Poverty." By Lord Bramwell. 1884.

stands, because every patch of land has become of great value. No doubt, to confiscate land and raise the public revenue out of it would be a fine thing for all the community save the land-owners; but so would confiscating chattels be a fine thing for all but the chattel-owners, and the confiscation of labour would be a splendid thing for all but the labourer."

As regards the question of separate *versus* common property, Lord Bramwell puts the impracticability of a system of common property in a few clear words. "Is it not," he says, "absolutely certain that a man will do better with a piece of land, will get more out of it each year, if he has it for two years instead of one, for ten years instead of two, or for all time instead of ten? If the profit of his care and labour will be his at some time, will he not bestow them when otherwise he would not? It cannot be doubted. Tax him if you like, tax his rent, tax him *ad valorem*, but leave him enough to tempt him to improve. It is too plain; separate property in land, as in sheep and oxen, is for the good of the community; and if so, the quantity that one man may own can no more be limited than the quantity of sheep or oxen he may own, nor the use he shall make of it. Have an agrarian law; give each man his share. In ten years the careful, skilful, and provident allottees would be the owners of the share of the careless, unskilful, and improvident, and it is for the general good it should be so." In fact, it is obvious that Mr. George's proposal as regards land is absolutely opposed to all the doctrines which time has shown to be the soundest. The aim of the men of the great French revolution was to enable as many of the community as possible to become the owners of the land, and to destroy the power of the great nobles; but Mr. George would confiscate the plot of the peasant proprietor as much as the park of the peer; he would at one blow put an end to one great incentive to thrift and to one of the greatest bulwarks of freedom and progress. So retrograde, so absurd a proposal has only to be shown in its true colours to produce its own refutation.

"MEN OF THE TIME."*

AN ARCHITECTURAL SURVEY.

That the compiler or editor of a biographical dictionary has no very easy task in choosing the names of the persons, whether contemporaries of his own or not, who are to be included in it, will be readily conceded. The difficulty is all the greater because there is no possible test which can be regarded as satisfactory or final. The editor is, in fact, solely responsible: by his competency or incompetency the success of the enterprise must stand or fall. From him there is no appeal.

Of course there are some names which everybody will look for here, with a certainty of finding them. Not to include the great names, which are in every one's mouth, would be indeed too scandalous. But we want more than that in a dictionary of Men of the Time. Every man engaged in a liberal profession has a right to expect to find the leaders of it recorded here, with some particulars of their lives and careers; he expects also, and with reason, to find the professors of the art or science which he practises, with the presidents and leading officials of the institutions established for their study, or to protect their interests. He will look for those who have achieved the honours, whether complimentary or official, that their brethren or the Crown have to bestow. Besides these there will always be a certain number of men in every department of human endeavour, in whose cases public recognition, such as we have ventured to specify, has either been declined or delayed, but whose general, social, or professional repute would seem to justify their insertion.

These are some of the tests to which we have subjected the volume before us,—as regards, that is, the professions and occupations with which the readers of this journal are for the most part familiar. We may state at once that a somewhat careful examination discloses the fact that only the thirteen architects, whose names follow, are considered by Mr. T. Cooper, F.S.A., to be worthy of such distinction as it is in his power to confer:—Professor Donaldson (*clarum et venerabile nomen*), Mr. G. Godwin, Mr. Fergusson, Mr. J. H. Parker, Sir J. A. Picton, Mr. Waterhouse, Mr. Butterfield, Mr. William Dawes, Mr. C. F. Hayward, Mr. James Knowles, Mr. Norman Shaw, Mr. Aitchison, and Mr. Thomas Henry Watson. There are two foreign architects only; these are MM. Garnier and Questel. It may be seen at a glance how absurdly capricious and inadequate is such a presentation of what our editor denominates the "Aristocracy of Intellect," as regards the architectural profession. Even of the names above given, some are those of gentlemen whose principal claim to distinction is, undoubtedly, literary. But we proceed to apply the imperfect tests we have suggested, and the matter becomes more remarkable. Of the Presidents of the Royal Institute of British Architects, we miss the names of the present President, Mr. Horace Jones, who is also the City Architect, Mr. Charles Barry, and Mr. Whichcord. Of the architectural members of the Royal Academy we find, as we said, Mr. Shaw and Mr. Aitchison, whilst Mr. J. L. Pearson and Mr. Bodley are unaccountably omitted. Of the occupants of professorial chairs, we miss the names both of Mr. Kerr (of King's College) and Mr. Roger Smith (of University College), as well as Professor (*emeritus*) Hayter Lewis. Passing to those who hold important architectural appointments, we fail to find Mr. Penrose, of St. Paul's Cathedral; Mr. Robson, of the London School Board (or Mr. J. J. Stevenson); Mr. Blomfield, of the New Law Courts; Mr. Christian, of the Ecclesiastical Commission; or Mr. Eastlake, of the National Gallery. Besides these, for certain special reasons which should be well known to an editor of a work of this class, we ought at any rate to meet with the names of Mr. C. J. Phipps, architect of half of the London theatres; Col. Edis, of the Artists' Volunteer Corps; and Mr. J. P. Seddon.

There is another class of men we ought to find well represented here. A contemporary has complained of the absence of several of the great engineers,—of Bramwell, Coode, Abernethy, Brunlees, Hawksley, and Bateman. These are notable omissions. But we claim that the men who have designed, constructed, or carried out great works of public utility, and the leaders of industrial enterprise, ought to appear; but we cannot find the names of Sir George Elliot, Sir John Kelk, or Sir Charles Freake. We have Sir E. Watkin, but not Colonel Beaumont; we have Sir D. Gooch, but not Mr. J. Staats Forbes. Nor have we men like Mr. J. W. Swan, or Mr. St. G. Lane Fox, the electricians.

It seems to us, therefore, that tried by the simplest tests that occur to us, this volume is extremely unsatisfactory. From a cursory inspection of it, beyond the purely professional boundaries we have assigned to ourselves, we firmly believe that numbers of other professions, political, literary, artistic, and what not, might form an indictment equally fatal to its being considered, in any sense, to have approached even its own ideal of what it should be, extremely moderate and inadequate as that ideal appears to us to be.

* Men of the Time. Eleventh edition. London: G. Routledge & Sons. 1884.

Parquet Flooring.—We have received from Messrs. Howard & Sons a specimen design for parquet flooring put together on a process patented by Mr. G. Howard, and exhibiting a flowing design in Renaissance character carried from square to square over the joints of the parquetry. Apparently the suggestion is for a freer treatment of parquet flooring design in place of the geometric treatment of such work which is most generally adopted. If the process of cutting and fitting by Messrs. Howard gives greater facilities for this freedom of treatment, architects may be glad to know of it in order to introduce greater variety of treatment into their designs. At the same time, we are disposed to say that, considering that in wood flooring we are dealing with a material of fibrous character and strongly-marked grain, a geometric treatment by fitting the pieces is more suitable than a style of design which involves cutting across the grain. In marble inlay one can suitably work the lines of the design in any direction, and in curved or straight lines, with equal appropriateness; but in wood inlay it seems desirable to adopt a more formal and geometrical character, both on artistic grounds and in consideration of the probable greater durability of work in which cross-cutting and oblique cutting, in respect of the grain, can be avoided.

THE BEWICK MANIA.

Catalogue of the Bewick Collection, Newcastle, 1884.

Many lovers of Bewick and many speculators in his work, will be jostling one another for seats in the night mail on Sunday, the 3rd inst. On Monday the 4th, the collection is on view at Newcastle. On the three following days it is to be sold.

The "executors of Miss Bewick, deceased," have made the most of their opportunity. Their catalogue cost us a shilling. The sum, had we saved it, and bided our time, would have secured, we cannot doubt, several "lots" of this promiscuous collection. Honestly, Mr. Robert Robinson, it was not worth it. It is "embellished," it is true, with some heretofore unpublished cuts, but these are not interesting on the whole. They are badly printed on very unsuitable paper.

The property is comprised in 645 lots. If any have raised their expectations very high, it will be well for them to know that the larger part of these relics look (on paper) dismally uninteresting. We yield to none in loving reverence for the father of English wood-engraving, yet we confess at once that we should never go to Newcastle to compete for the possession of Lot 62, consisting of a copy of Mavor's Spelling Book, "the gift of T. Bewick to Elizabeth Bewick," and another book. Neither do we feel any restless craving for that walking-stick (No. 445) one while in the possession of John Bewick. The stick, it is said, conceals in its vitals a "hautboy," and into "this deeply interesting memento" the "talented young artist" would pour his soul and make night hideous in the neighbourhood of Hornsea, and along the exuvial reaches of the lower Thames. There is yet another stick (No. 446) with the initials D.S. We cannot think that this would be a quite irreproachable keepsake to have of its quondam proprietor *de facto*—our unique T.B. Yet this precious staff stands high on the list of the personal relics.

There is a large silk umbrella "inscribed T. Bewick." We should like that. Woodcuts were woodcuts, and silk was silk, in the good old times of its sturdy possessor.

To the things we have mentioned the executors of Miss Bewick would attach a quite special interest. The greater part of the catalogue is occupied with matters of less than common interest. There are one or two old pictures, it seems, of which the compiler speaks in that loose, elusive, and yet suggestive manner, which is proper to so recondite a subject. Lot 257—David Teniers—"The Toper"—"painted with that ease and spirit for which the great master of the Flemish School was so remarkable." That adventurous "so remarkable" reminds us of a panegyric upon Sir Joshua Reynolds by a late Mayor of Plymouth. "His works, I am told, wherever exhibited, give great satisfaction!" "No. 335, Rembrandt—two fine etched portraits by this great master—scarce." There is a careless generality about this description, which is likely to appeal to the humorous part of any collector of etchings. Again, there are etchings for sale of a cetain *Count* Bol, of whom we "desire more acquaintance."

We come now to the really interesting matter. There seems much, yet there is not so much after all. One result of the sale will be that a great number of imperfect copies of the "Birds" (chiefly of the 1847 edition), will be in the market. *Caveat emptor.* Two hundred and ninety-three copies of that scarce, delightful book, "The memoir of Thomas Bewick," are to be sold. Many who have been hunting it in vain will now obtain a copy. For all amateurs of wood-engraving there is a great deal of interesting stuff, but of really good editions there is a remarkable lack. An imperfect copy of the "Select Fables," 1784, is the only important book that appears in its first edition. There are parcels and parcels of "waste sheets," and numberless "imperfect copies." These, being clean, are very desirable. The fact, however, that so many of them are to be thrown upon the world is a circumstance of danger to the young collector, of which we would warn him in time.

In our judgment, it would have been better to have brought up to town (with the blocks which Christie & Manson will sell) all that is of genuine artistic value, and to have left the mass of household utensils, "fancy bellows," painted "towel-racks," and the rest, a prey to the Tyneside furniture-brokers.

LYCIAN ROCK TOMBS.

THIS was the subject of Professor Newton's fourth lecture of the present course,* delivered on the 25th ult. He observed that the rock-tombs of which he had to speak in the present lecture were very much later than the Harpy Tomb, and might be divided into three classes. First of all there were many tombs which were merely façades cut in the side of the rock or mountain, and which presented the appearance of small distyle Greek temples. Next, there was a class of tombs which, standing quite free on all sides, had been called, by German writers on architecture, *block-haus* tombs. These were provided with openings corresponding somewhat to windows with square mullions, and from this circumstance Sir Charles Fellows had spoken of them as "Elizabethan" in character. A painting [exhibited] by Mr. George Scharf, who accompanied Sir Charles Fellows, showed the sides of a rock, overlooking the City of Myra, studded with Ionic façades, and the same thing was to be seen in the neighhourhood of other cities in Lycia. The detached tombs were generally in the most picturesque situations, generally with magnificent backgrounds of mountains, and every sort of verdure. These, combined with the blue sky and sea, went to make these monuments exceedingly picturesque. The best idea of their appearance, short of an actual visit to Lycia, was to be obtained by an examination of those magnificent drawings of Lycia which some years ago Mr. Henderson bequeathed to the British Museum. Formerly exhibited in the King's Library, these drawings, which were by Müller, were now in the Print-room. There was another set of drawings of Lycian monuments in the Print-room, viz., those by Daniel, the ill-fated companion of Spratt and Forbes. There were also in the Print-room several interesting architectural drawings and a plan of the city of Xanthos, and drawings of several monuments. These drawings were made by Mr. George Scharf for the Trustees of the British Museum for a publication which, the lecturer regretted to say, had never seen the light. Some day it might be possible, by the aid of some of the combinations of photography and lithography, to publish the book. He proposed to confine his remarks in the present lecture to the detached tombs from Lycia which were to be seen in the British Museum. He could not but feel considerable regret at the very inadequate manner in which they were housed, ever since they were brought over to this country in about the year 1843. He did not know that any one in particular was to be blamed for this. His predecessor, Mr. Hawkins, when these Lycian marbles were brought over, specified with great care the sort of room he should like to put them in, but the room† assigned to them was very much smaller than they required. The tombs now stood very much lower than they originally did, for if a portion of their plinths had not been removed their tops would have gone through the ceiling. Notwithstanding this the sculptures were so high as to be inaccessible for study (except on one side) without the use of ladders. He grieved to say that any one who wanted really to study the sculptures on the top of this tomb must go to Berlin, where, in the Museum of Casts, were to be seen casts of the upper part of this important monument. What was more, the authorities of the Berlin Museum had had painted on the walls of the room where the casts were exhibited views of this and other tombs in Lycia, with representations of the natural scenery amidst which they were found. What we generally did in England in these matters was certainly an illustration of "how not to do it." The meagreness and scantiness of the space which had been allotted not only to these monuments but to many other important works contrasted very unfavourably with what was doing abroad, and that not only in rich countries, but in poor ones. While the French had built a great courtyard and roofed it over for the adequate display of the great "Victory" from Samothrace; while the Germans were resolved to display the wonderful series of friezes from Pergamos to the best advantage, even by rebuilding to its absolute full size the original enormous altar which the sculptures adorned; while the Austrians were taking special means, in the Museum of Ancient Sculpture which they were now building, to give adequate exhibitions to the great frieze, 300 ft. long, from that interesting place Djölbashi; we should most likely have relegated the valuable marbles to a shed under the colonnade of the British Museum for twenty years. Proceeding to speak of the *block-haus* tombs, with their pointed roofs, the lecturer pointed out by means of models and drawings how they, although of stone, had unmistakably derived their forms from wooden construction. Semper, in referring to textile fabrics, expressed incidentally his opinion that the upper part of such a tomb as the one now under notice represented a sort of catafalque over a funeral bier. Kugler, in his "Handbook of Architecture," made some very good remarks upon this tomb, particularly with regard to its derivation from a wooden structure. On this head the lecturer said he had received some very interesting remarks from Mr. Hayter Lewis, Emeritus Professor of Architecture in University College, who wrote:—

"The Lycian detached tombs, with circular coped tops, are so peculiar that they require a study to themselves. They are not directly derived, so far as I can see, from any more ancient works, nor do they appear to have influenced any beyond their own neighbourhood. . . . . Their design seems to be quite different in principle from that of the other tombs, though all are derived from wooden originals. But all others appear to be so from actual buildings, whereas these Lycian detached tombs give one the idea of great wooden *movable* originals, the massive stone beams at the base, with their curled ends, being representative of solid wooden supports to the whole structure above. This would rather favour Professor Semper's idea. I do not, however, call to mind any forms of tombs in other styles which could supply the origin of the pointed-arch tops, unless it be the Lycian one figured in 'Asia Minor'; but this is clearly stone. Of course, we have the rounded tops to the wooden coffins of Egypt, and it is possible that these may have been imitated in Assyria and Persia, and so given the type; though in these less arid countries the wood may have perished. If so, it is very possible that the pointed arch may have been used, as it certainly was known to the Assyrians, and Victor Place considers that the remains of Khorsabad prove it to have covered the hall there. Flandrin and Coste consider it, in fact, to have been the ordinary roofing of the Assyrian halls, and it is still so used at Mosul. So it is, also, in Upper Egypt, though I have never seen it so described. In the Lycian tombs I notice that there are the ends of wooden rafters carved under the curved roofs, and these may, possibly, represent supports on which the sun-dried bricks were placed (in two rings), and plastered over to keep out the wet."

The learned lecturer, in conclusion, proceeded to describe the sculptures on the smaller detached tomb in the British Museum, and to refer to the inscriptions, which were in the Lycian language, of which our present knowledge was very limited and uncertain. According, however, to the translations of the inscriptions by Savelsberg,* the monument was erected by one Paiafa, who was recorded to have commenced the tomb in his youth. Another translation, by Herr Moritz Schmidt, gave a somewhat different rendering of the inscriptions, and Schmidt's translation was regarded by Michaelis as being the more reliable and exact of the two. As to the probable date of this class of monument, he (Professor Newton) had never changed his opinion that they are not earlier than the middle of the fourth century B.C., and very possibly some of them may even be so late as the beginning of the third century B.C. It was probable that the form of these monuments had been due to Persian influence.

Professor Newton will continue the subject in his next lecture, which will be delivered this Friday, Feb. 1.

* See *Builder*, pp. 92, 142, *ante*.
† Now the Archaic Room.

* "Beiträge zur Entzifferung der Lykischen Sprachdenkmäler." Von J. Savelsberg. (Bonn, 1878.)

Liverpool Engineering Society. — The first meeting of the session was held on Wednesday evening, January 16th, at the Royal Institution,—the vice-president, Mr. J. S. Brodie, M. Inst. M.E., in the chair,—when a paper entitled "The Application of Compressed Air to Mining," was read by Mr. M. G. Johnson. The author commenced by pointed out how necessary to the mining engineer was the transmission of power, and enumerated the various methods, namely, steam, water, wire-rope, compressed air, and electricity, explaining the various properties of each as available for underground working, and pointing out that, with compressed air, there was a large power available at any part of the mine for working machinery and also for ventilating purposes.

CHEAPSIDE IN THE REIGN OF HENRY VIII.

IT would be quite impossible for us at the present day to realise what "old Cheapside" was like, were it not for the few contemporary engravings which represent portions of it, and the very detailed description given by Stow; but even these are only intelligible to those who have made the ancient architecture of the metropolis a careful study, and who are thoroughly conversant with the singular way in which draughtsmen of the sixteenth and seventeenth centuries represented, or, rather, misrepresented, objects. Even Hollar seems to have been quite incapable of accuracy in his delineations of buildings. His plan of Old St. Paul's, for instance, disagrees with the elevations. his elevations disagree with one another, and his descriptions are, again, at total variance with both plan and elevations. Hollar, however, is accuracy itself compared with any other draughtsman of his time. It is only by comparing drawings together, by making allowances for the various discrepancies, by a very careful study of existing ancient buildings in the metropolis, by noticing how far old engravings represent or misrepresent *them*, that we can arrive at anything like a just notion of their value in representing buildings now destroyed, or tell how to use them in imaginary restorations of ancient buildings or cities. Judging from the various maps, bird's-eye views, &c., which exist, it appears that old Cheapside followed pretty much the same lines that the present street does, and it appears to have been of about the same width. Towards the west, however, it widened out, and the centre of the road was occupied by a church dedicated to St. Michael. This church is called variously St. Michael ad Bladum, St. Michael le Quern, and St. Michael Paternoster.* The two former appellations have reference to its being situated on the site of an ancient corn-market, and the latter to its proximity to Paternoster-row. It was evidently at the time of its destruction by "the Fire of London" a plain, Perpendicular, building, consisting simply of a nave and tower at the west end; to the east of this church, and standing in the middle of the road, was a square building, with octagonal pinnacles at the angles; this was one of the city conduits, and was known as the little, or "lesser," conduit in Cheap. It appears, as far as one can make out, to have been about the same date as the church.

To the south of the Church of St. Michael, and on the opposite side of the street, stood one of the gateways leading into the greater cemetery, or churchyard, of Old St. Paul's, and near to it was an isolated tower of thirteenth-century work, crowned by a lofty wooden spire, on the top of which, in Henry VIII.'s time, was a gilded statue of St. Paul, and in the tower were hung four bells, called "Jesus bells," because, as Dugdale says, "they belonged to Jesus Chapel, situated in the eastern portion of the crypt, under Old St. Paul's." That enlightened monarch, Henry VIII., lost both the bells and the statue at one throw of the dice, to Sir Miles Partridge. It is consoling to learn that this same Sir Miles Partridge was beheaded in Edward VI.'s time. The famous preaching-cross, known as St. Paul's Cross, stood between this tower and the cathedral. Several other buildings of importance stood to the north of the cathedral; amongst others was a beautiful chapel known as Pardon Church Haugh. This chapel was founded by Gilbert à Becket, father of Thomas à Becket; it was rebuilt in Henry V.'s time. It was surrounded by a great cloister, probably forming the great cloisters of the cathedral; both were full of magnificent monuments, so much so that Stowe says "that for curious workmanship they passed all others that were in the cathedral itself;" moreover, its walls were adorned by a series of pictures representing the Dance of Death, which were executed at the charge of Jenkin Carpenter, one of the executors to Sir Richard Whittington, who also employed John Lydgate to write an English translation of the inscription attached to similar paintings in the cloisters of the Innocents at Paris. This cloister was probably a kind of "Campo Santo" to the cathedral; both chapel and cloister, however, were pulled down by Protector Somerset. The stones were carted off to help in the erection of Somerset

* It must not be confounded with St. Michael, Paternoster Royal.

House, and the bones of the dead were used to form a mound at Finsbury, which, when covered with road dirt and other rubbish, formed a convenient groundwork whereon to erect a windmill. The bishop's palace stood to the west of these cloisters, and to the north was the Charnel Chapel. Over the eastern walk of the cloisters was a magnificent library. All these buildings, except the bishop's palace, shared the fate of the cloister. Of the vast cathedral itself it is not our intention to speak, except to mention the fact that the great spire, of wood covered with lead, was destroyed by lightning in the year 1561, and never afterwards rebuilt. It had previously been restored in Queen Mary's reign.

Returning to Cheapside. On the north, at the corner of Wood-street, stood the Church of St. Peter, in Cheap; judging from the ancient drawings, it would appear to have been a Perpendicular building of moderate dimensions, consisting of a nave and aisles, with a fairly lofty western tower, crowned with a small domical turret of wood. In the centre of the road, nearly opposite to the south-east angle of this church, stood the high Cross of Cheap; it was one of the Eleanor Crosses erected by Edward I., and appears to have been a remarkably beautiful structure; it was, however, restored in Henry VII.'s time, and again in the time of Elizabeth, after it had been almost destroyed by an outbreak of Puritan fanaticism. The quantity of abuse levelled at this beautiful monument of the Middle Ages by Puritan preachers and poets would fill a whole library, but the choiceness of the language might deter respectable readers from perusing this highly-spiced theological literature. Between Bread-street and Bow Church stood Goldsmith's-row: this consisted of a series of houses and shops, which, according to Stow, were four stories high, framed in timber, and presented a façade of ten gables all alike towards Cheapside. They were erected by Thomas Wood, goldsmith and sheriff of London in 1491; and were adorned with carvings of woodmen riding upon monstrous beasts, coats-of-arms, and other ornaments; they appear to have been amongst the most elaborate examples of domestic architecture in the metropolis. Opposite the western portion of this row in the middle of the street, was an octagonal tower, crowned by a projecting parapet and open lantern of stone, the lower portion of which formed a fountain; this building was called the "Standard," in Cheap. A little further east, in front of Bow Church, which it blocked out from the street, was a costly building of stone, with an open arcade in its upper story looking towards the street; this was called the "Crown Sild," or "Sildam." It appears to have been rebuilt about the year 1410; from this building the kings and royal visitors to London used to watch the pageants and processions at Cheapside. Some portions of the remains of this building were discovered in 1845, and were described in the *Builder*. Immediately to the rear of the Crown Sild stood Bow Church. Its tower was of somewhat remarkable design, recalling to one's mind St. Nicholas Newcastle and St. Giles's, Edinburgh; it had, however, this difference,—Bow Church possessed five open lanterns. Fortunately a tolerably correct representation of this remarkable building is preserved in the seal of Bow Church dated 1650; the tower itself was completed in the reign of Edward III., but the arched top and five lanterns appear to have been either added or rebuilt in the year 1512. It has sometimes been supposed that the term Bow Church, or *Ecclesia beatæ Mariæ de arcibus*, received its name from this arched top to the tower, but in all probability the title is of a much older standing. The tower of Bow Church appears to have possessed a clock from early times; one of the clock-faces is shown in the seal of the church. Nearly opposite to Bow Church a somewhat remarkable-looking house is shown in the old views; it has a great hipped roof and two projecting turrets or oriels at the angles. We have been unable to ascertain what the building exactly was, it may have been a great inn or hostlery. From the fact that the two great turrets, or oriels, project forward as they increase in height; it seems pretty evident that the building was of timber.

We need scarcely say that not a single ancient building in Cheapside escaped the fire of 1666, which raged here in greater fury than in any other part of London; it was certainly the most magnificent street in the metropolis, and has been not inaptly compared to the Maximilian Strasse at Augsburg, of which we gave a view some little time back.*

H. W. B.

THE NEW CIRCULAR WARD AT THE HAMPSTEAD INFIRMARY.

It has fallen to the Guardians of the Parish of St. John, Hampstead, to have the distinction of being the first parochial authority in Great Britain to put into practical form that which has been for so long talked of and written about, viz., a circular ward for infirmary purposes, which we this week illustrate by a general ground-plan, and elevations and sections, from the architect's working drawings.

An extension of the Workhouse Infirmary having become a necessity, the question to be solved was how it should be done, having regard to the restricted size and position of the available land, and the convenient position of the new ward in relation to the existing Workhouse and Infirmary. The Workhouse is one of the old-fashioned ones, erected in 1845, and added to at various times, the latest being in 1870, when two oblong infirmary wards for 100 beds were erected running out at right angles to the main building, but not connected with it excepting by covered corridors. The varying levels of the floors of the main building rendered this by no means an easy operation.

The site available for the new extension consisted of a piece of ground on the west side of the existing wards,—about 110 ft. by 150 ft.,—with a frontage to the street, but surrounded on the other sides by houses, the gardens of which abutted on the site; and there is also a rapid fall in the ground from north to south of about 30 ft.

The first proposal was to build an oblong ward of three floors parallel to the existing ones, and separated from them by as wide a space as possible; and another suggestion was to place it at right-angles to the old wards, due east and west. Both these proposals were found to have serious disadvantages. The first would affect the light and air to the adjoining properties, and the second did the same to the existing wards; and both made the arrangements for the connexion with the administrative department which it was necessary to retain in the Workhouse block, of a difficult and complicated nature. The late Dr. Cook, the able medical officer to the Infirmary, was a man who took a deep and practical interest in the subject, and to him belongs the credit of first suggesting the idea of erecting a circular ward. It was readily taken up by the architect to the Guardians, and, after a long and exhaustive series of arbitrations and conferences with the officials of the Poor Law Board, in which the hearty sympathy and valuable suggestions of their architect, Mr. Percival Gordon Smith (whose pamphlet on the circular-ward system is well known), were enlisted, the consent of the Board was given to the ward as illustrated. A separate and distinct Infirmary entrance for patients is provided, for the old part as well as the new, from New End, with receiving-room, giving access, by a covered corridor, to the several wards. The levels are so arranged that the old and new wards are all on the same level. Above the receiving-room is the matron's sitting-room, with nurses' mess-room over. The circular ward contains seventy-two beds in three floors, of twenty-four in each. The ground floor is over a basement, used for heating and ventilating purposes, and to ensure perfect dryness to the wards. The diameter of the ward is 50 ft., and the heights of the floors are 13 ft. and 12 ft., agreeing with those in the old building. It was found that any increase of this diameter greatly added to the expense without proportionately increasing the number of beds. A south-west aspect is obtained for one half of the ward, and a free circulation of air is maintained all round, whilst the rights of light and air to adjoining owners are unaffected. The central shaft, whilst necessary for the construction of the building, is also the medium for dealing with the ventilation,—a matter of some concern to the advocates of the circular system. The shaft is 5 ft. internal diameter, and is divided by sheet iron into four divisions, one for the extraction of vitiated air from each of the three wards, and the fourth (one-half of the whole area of the shaft) forms an upcast to discharge the whole to the outer air. A furnace, with coil of hot-water pipes, exhausts the air from the wards through openings in the shaft, to the bottom of it, and the air is thence dispersed by the upcast. The fresh air is supplied from gratings under the sills of the ward windows, and passes over a coil of pipes placed in each of the window backs, and protected by a slab of slate, the heated air being liberated up the cill-level through a grating.

By this system a constant stream of pure air is supplied at the rate of 2,200 ft. per hour per patient. In winter the temperature will be at 65 degrees when it is freezing outside, and in summer the hot coils in the basement will always maintain a current of air through the ward. All the windows have hopper heads to open. There are also small wards for two beds each on each floor at the entrance to the large ward, with nurses' store and dust-shoot adjoining; and on the opposite side of the passage is a ward scullery and staircase. The water-closets and lavatories, &c., are all contained in a projecting block from the ward, with disconnecting passage, having a through ventilation. Each floor has a bath-room, water-closet, urinal, and broom-closet. From the short passage, access is had from each ward to a wide balcony, forming a pleasant promenade for patients on the south side.

On the top of the lavatory block a large tank to hold 12,000 gallons of water is placed, to supply the whole of the workhouse in addition to the new ward, and also for working the hydraulic lift at the entrance. This is not only for patients' use, but specially serves to convey all the meals to both the new and old wards, from the new kitchen, which is built above the existing block of buildings facing New End, comprising kitchen, scullery, larders, &c. The meals also for the workhouse inmates will be cooked here, and by means of a hand-power lift will be delivered into a serving-room below, adjacent to the workhouse corridor.

The whole of the new wards will have chocolate glazed bricks as a dado 4 ft. high inside, and fair joint brickwork coloured above. All the walls will be of white Suffolk bricks, relieved by Luton brick bands and arches. The attic storey of the new ward is devoted to nurses' bedrooms, with bath, &c., for their use.

The floors of the ward are supported by iron joists radiating from the centre shaft, which is encircled by iron columns and spandrel pieces embracing the whole.

The works are in active progress, and it is fully hoped to have this unique and interesting experiment in hospital construction in working order during the present year.

The architect is Mr. Charles Bell, and the general contractor Mr. Oliver T. Gibbons, of Ipswich, and the clerk of works Mr. G. Berry. The hydraulic and other lifts are by Messrs. Waygood & Co., of Great Dover-street, Southwark. The ironwork is being supplied by Messrs. Williams & Co., and the warming and ventilating is by Messrs. Bacon & Co., of London.

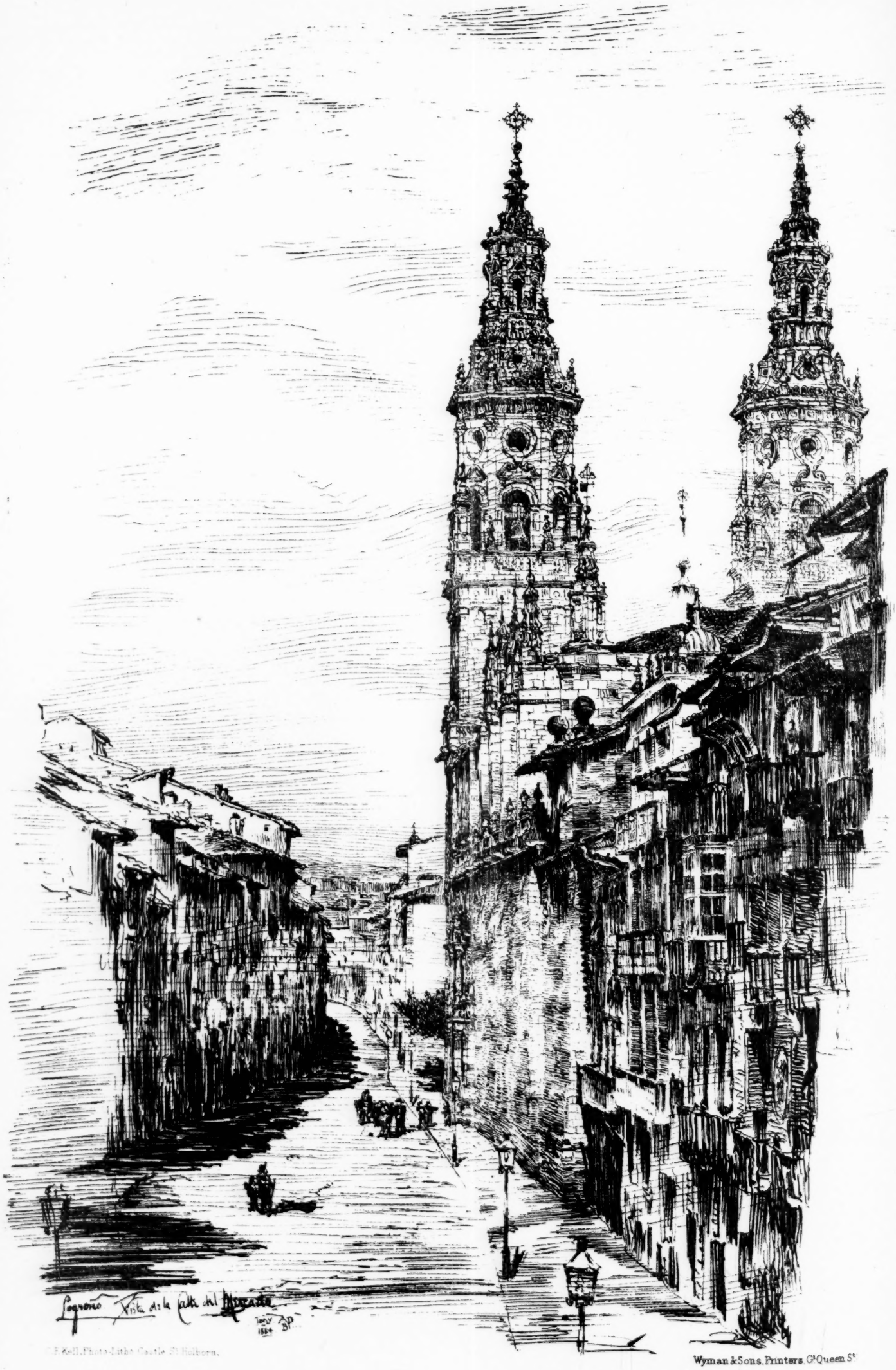
The total cost, including corridors, kitchen block, warming and ventilating, is 10,400*l.*, a price which will compare favourably with the cost of some recent new Metropolitan infirmaries.

* *Builder*, Sept. 29, 1883.

INDEPENDENT CHURCH, LOWER EDMONTON.

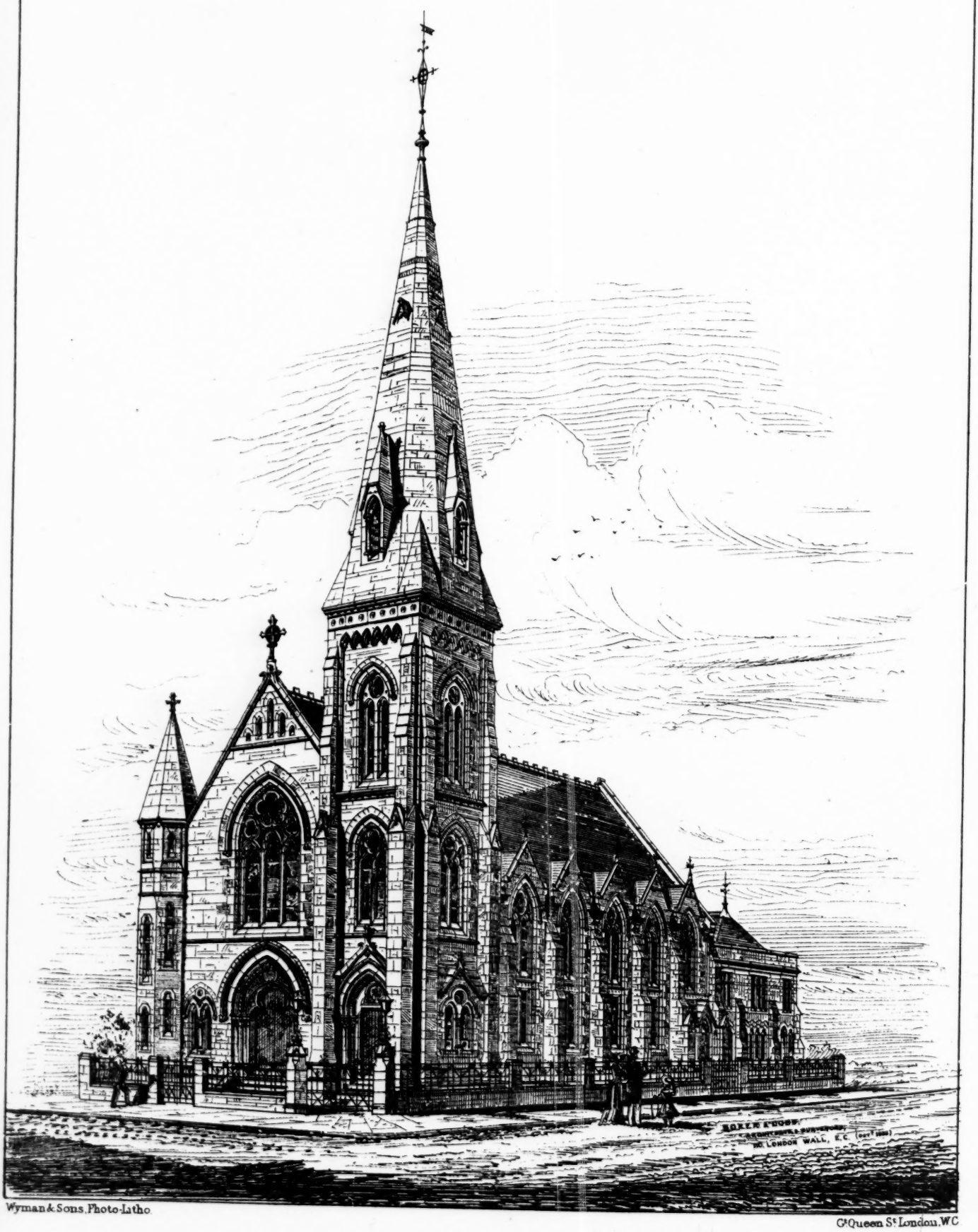
We this week illustrate Messrs. Borer & Dobbs's design for the Independent Church, Lower Edmonton, which was selected in a limited competition. The building consists of church, 92 ft. by 48 ft., and will accommodate 1,000 persons. There are two entrances, with vestibules, chancel, organ-chamber, two vestries, and three committee and class rooms. The exterior of the building is faced with Kentish rag and Bath stone dressings; the spire is 142 ft. high. Mr. Sharman, builder, is carrying out the works, his estimate for the entire building being 7,060*l.* The east end, or school portion, is now finished, and has been opened as a temporary church.

Ventilation.—Messrs. Robert Boyle & Son, of London and Glasgow, have recently applied their system of ventilation to the new Prince's Theatre, Coventry-street, and to several club-houses, barracks, and prisons.



Wyman & Sons, Printers, G.t Queen St.

VIEW IN THE CALLE DEL MERCADO, LOGROÑO, SPAIN.



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INDEPENDENT CHURCH, LOWER EDMONTON.—Messrs. Borer & Dobb, Architects.

C.F. Kell, Photo-Lith. & Printer.

A. Castle & Burrowes Lithographers & C

BAYNARDS CASTLE

BOW CHURCH
THE "CROWN SILD"

THE GOLDSMITH'S ROW

ST PAUL'S

THE "CLOCHIER"

THE HIGH CROSS

"PARDON CHURCH HAWGH"

ST MICHAEL AD BLADUM

THE "STANDARD"

THE LITTLE CONDUIT

ST PETER "IN CHEPE"

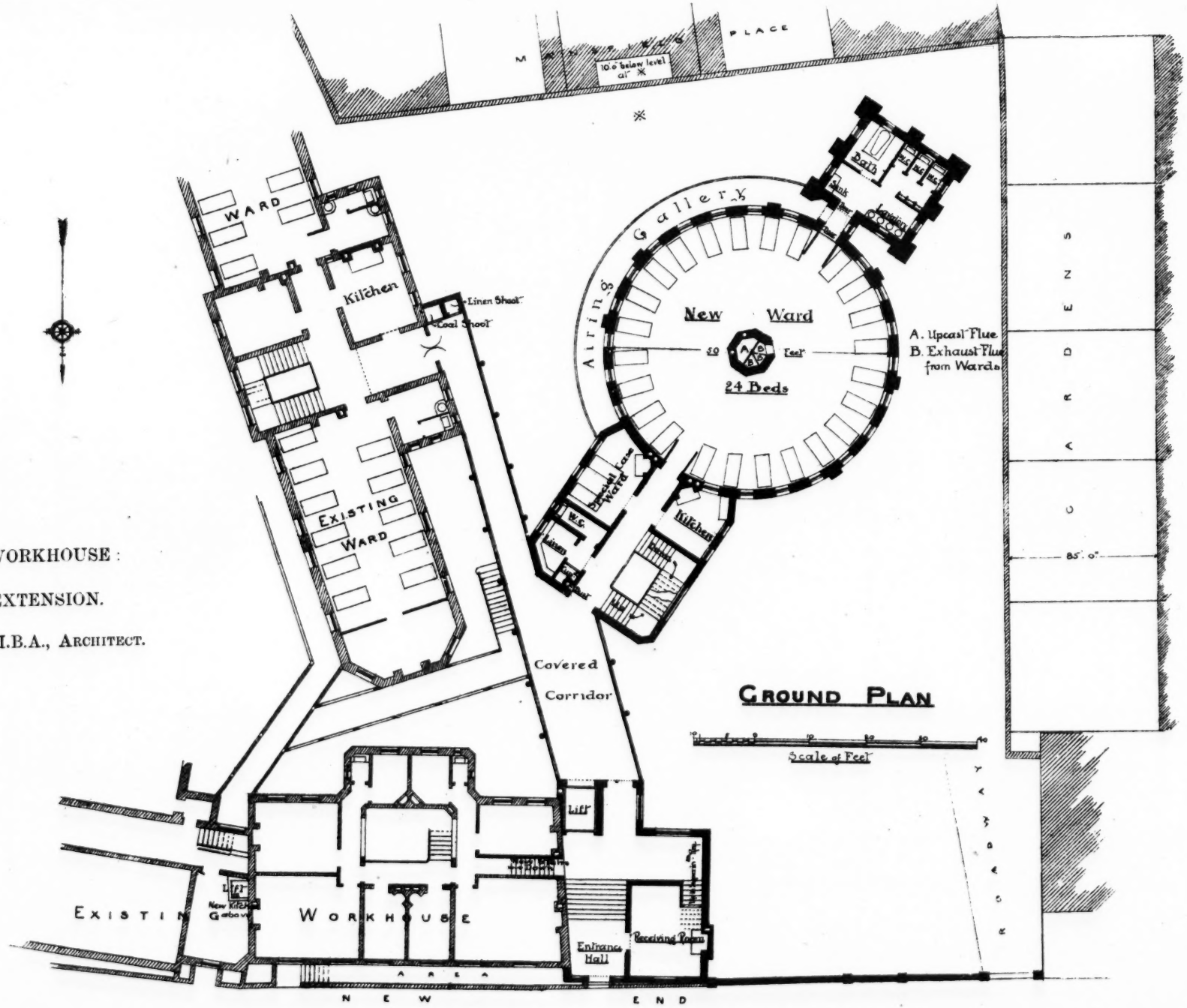
CROWNES

CHEAPSIDE IN THE TIME OF HENRY VIII

HAMPSTEAD WORKHOUSE:

INFIRMARY EXTENSION.

MR. CHAS. BELL, F.R.I.B.A., ARCHITECT.


PLACE
10.0 below level at X
WARD
Kitchen
Linen Shoot
Coal Shoot
EXISTING WARD
Airing Gallery
New Ward
60
Feet
24 Beds
A. Upcast Flue
B. Exhaust Flue from Wards
Bath
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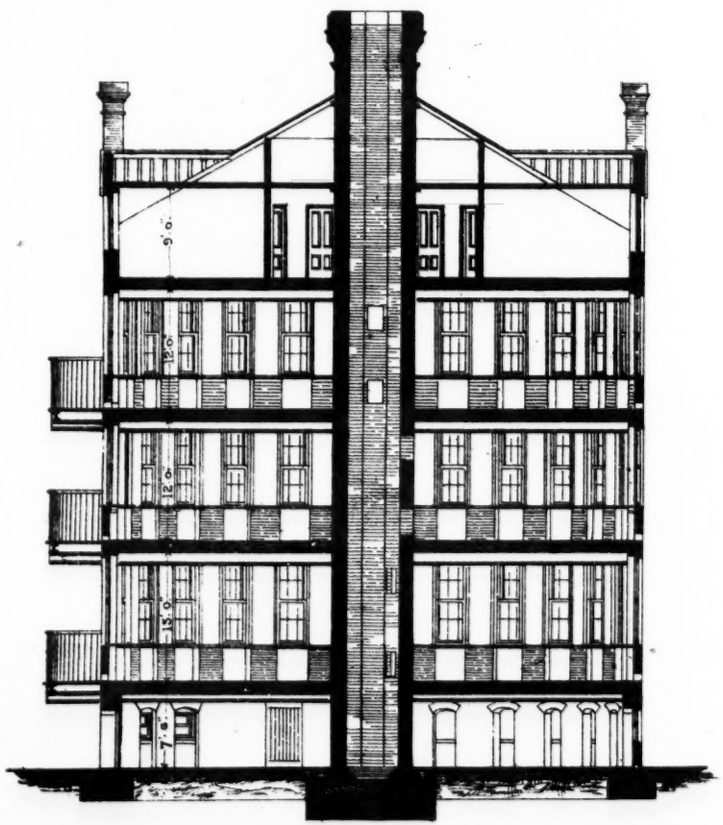
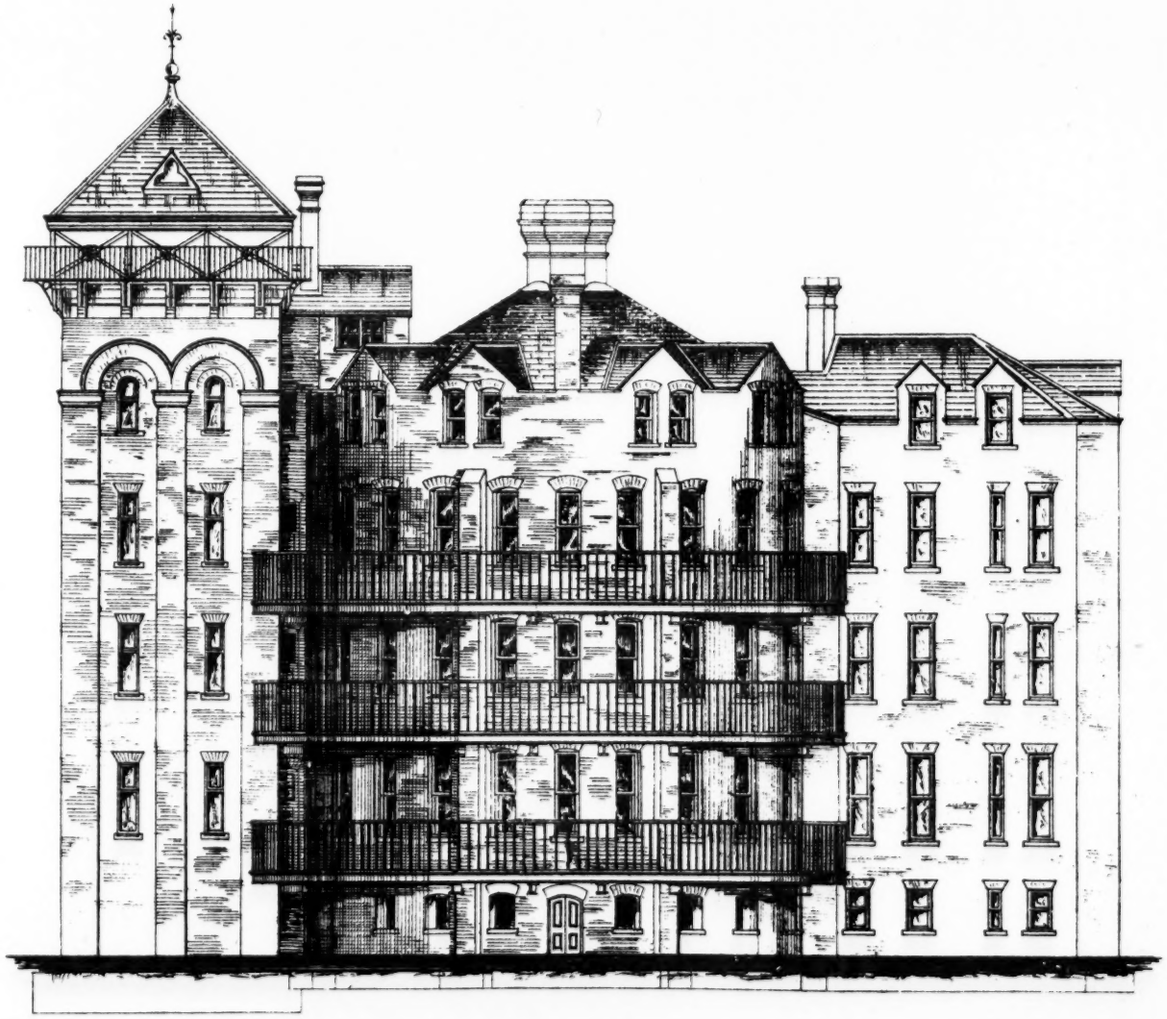


SECTION THROUGH WARD



SOUTH EAST ELEVATION

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C^t Queen S^t London W.C

HAMPSTEAD WORKHOUSE: INFIRMARY EXTENSION.——MR. CHAS. BELL, F.R.I.B.A., ARCHITECT.

POLICE AND FIRE BRIGADE STATIONS, NEWCASTLE-UPON-TYNE.

WE had prepared for issue with this week's number views of the designs which Mr. Worthington, the architectural assessor, placed first and second in this competition, their authors being Mr. A. B. Gibson and Mr. W. H. Seth-Smith respectively. Owing to an accident, however, we are compelled to postpone the publication of these drawings until next week.

TECHNICAL EDUCATION FOR ENGLISH WORKMEN.

ARTISANS' TECHNICAL ASSOCIATION.

WE last week * gave the substance of the report of the council of this Association, together with a paper read by Mr. Harland, the Chairman of the Council.

In the discussion which took place on the report, Mr. Harland said that the work of the Association was progressing favourably, and they hoped shortly to bring it before the various trade societies of London, through the medium of the committees which had been formed. He moved the adoption of the report.

Mr. J. Robertson, carriage builder, seconded the motion, and expressed his belief that the method in which theAssociation was proceeding was eminently calculated to be successful, the members of the various trade committees, which were composed exclusively of working men, being more likely to reach the members of their respective trades than the efforts of outsiders.

The motion having been agreed to, the chairman (Mr. G. N. Hooper, vice-president) invited discussion as to the future work of the Asociation.

Captain Pfoundes asked whether the association proposed to extend its operations so as to reach all the artisans who were members of the existing workmen's clubs? It would be very desirable for it to do so, he thought, for it was his experience, both in England and America, that there were many men in the trades connected with marine architecture and engineering who were very indifferent workmen; and doubtless the same thing could be said of other trades. Most of the lectures given in connexion with workmen's clubs were of a literary or historical character; but it was surely possible and desirable to organise courses of technical lectures in connexion with the clubs?

Mr. Harland said that the Council were most anxious to bring before the members of working-men's clubs, not only in London, but throughout the kingdom, the means of technical education.

Mr. Wright, of the Polytechnic, was surprised that the Council of the Working Men's Club and Institute Union had not taken up the matter of technical education. Personally, he should like to see large technical schools established to take the children as they issued from the Board schools. They would be more teachable than adults, and such juvenile technical schools might, he thought, largely make up for the lack of apprenticeship.

Mr. Hanniball said that as a boot-maker who had been doing his best in carrying on technical classes connected with his trade, he was compelled to admit that he was cognisant of a great deal of prejudice on the part of workmen against technical education. Workmen required to be reasoned with and in a degree educated up to a point to enable them to see the necessity of technical excellence and skill in their crafts. They could only be got at in sections, and by the members of their own trade, in the manner which was being pursued by the Association. Working-men as a body must be disabused of the idea which some of them entertained, that the movement in favour of technical education was merely, as they expressed it, "a move on the part of the employers to get more work done for the same money." That was a very mistaken idea. The primary object of the movement was to improve the men in their work in order that they might retain the means of livelihood. There were many trades the work of which was likely to go to foreign countries unless there was a great improvement in English work.

The Rev. Henry Solly, late Principal of the Artisans' Institute, referring to the results of the first year's working of the Association, said that they were not so great as could be wished for, but, of course, a great deal of time and energy had to be devoted to the necessary work of preparatory organisation. Another reason why the Association was unable to show better results was due to the apathy of the workmen themselves. Efforts had been made to establish classes in South London, especially in the district lying between Blackfriars-road and Westminster Bridge-road, and in Battersea, without success. As to aid from the City Guilds, the Carpenters' Company had voted the Association twenty-five guineas, on the understanding that the money was to be employed in the establishment of carpentry classes, but in neither of the districts named could they succeed in inducing a sufficient number of candidates to come forward.

Mr. C. T. Millis was inclined to think that the Association was beginning at the wrong end in trying to establish classes at first. He thought they should have held more preliminary meetings to explain their objects and intentions, and to enlist support.

The Chairman said that in his trade (coach-building), at any rate, there was no apathy shown in the matter, for the classes in which he was interested* had been attended by between 200 and 300 students, and similar schools had been established in Manchester, Worcester, Newcastle, and other provincial centres. From these London classes for coach-builders there had also sprung similar classes in New York. These results in the coach-building trade had been brought about by hearty co-operation between the employers and workmen.

Mr. Harland then read the paper which we have already printed, supplementing it by some observations which tended to show the difficulties placed in the way of teachers of technical classes by the requirements of the Science and Art Department. For instance, he said he had a class for Practical Mensuration as applied to the Building Trades. This class was not held under the regulations of the Science and Art Department, but was supplementary to the Class for the Study of Building Construction held in accordance with the Syllabus of the Department. If, while teaching in this latter class the principles of roof construction, he were to teach his pupils to calculate how many cubic feet of timber there were in a roof of a given type, he should be transgressing the rules of the Department, and hence it was necessary for him to hold a supplementary class for the purpose of imparting the necessary practical information to the students.

The Chairman wished it to be understood that the Association had been founded for the purpose of practically assisting the spread of technical education amongst the artisans of this country. One point which had been commented upon in some quarters was that the technological examinations formerly held by the Society of Arts showed a great increase in the number of candidates who passed them since they had been held by the City and Guilds of London Institute. But there was a very easy explanation of that fact, and that was that under the City Guilds Institute the examinations were less strict than they were when under the auspices of the Society of Arts. As to the proposed exhibition of handicraft in connexion with technological examinations, it was a subject which was a little difficult to deal with, and one the details of which would be best considered by the various trade committees which the Artisans' Technical Association had appointed. In some trades it was obviously very difficult to say offhand how specimens of work and skill could be adequately exhibited,—that is, exhibited within reasonable limits of space, and yet with sufficient detail to enable a true estimate to be formed of the character of the work. It had been his lot, as a member of the coach-building trade, to serve upon several international juries. He was, therefore, in a position to say that the French were certainly running all other nations very close in regard to excellence of work in coachbuilding. There was great force in what Mr. Harland had said as to the futility of men going to science classes to learn the rudiments of trades totally disconnected with those which they followed for a living. It was not advisable for a man to attempt to become a "Jack-of-all-trades" unless he were contemplating a lonely sojourn in the Backwoods.

Mr. John James, as a teacher of a technical class, testified to the value of Mr. Harland's classes at the Polytechnic, which were of a nature, in his opinion, best calculated to meet the necessities of the case.

Mr. Barber, turner, said he could quite endorse, from his own experience, all that had been said as to the apathy of workmen on this question. One or two efforts to improve the technical efficiency of members of his own trade had thoroughly failed. There was great difficulty in getting workmen to believe that a knowledge of science would be profitable to them. They were too prone to rest content with the way in which their fathers or their "old gov'nors" had done things. If this movement for technical education were to come to anything it must be taken up earnestly by the workmen. It was not so much a matter of money as a matter of sympathy. Even where pecuniary help was given it was not always most judiciously applied. For instance, the Turners' Company for the last few years had organised competitions, and offered prizes for the best specimens of workmanship, but the results of these competitions could hardly be said to be satisfactory. He did not think that the City Guilds Institute made its examinations severe enough,—that is to say, in his own particular trade. The examinations ought to be more thoroughly practical. It was said that plenty of workmen could be got. That was true; but what were they? They were not good "all-round" men, but men who did their work as turners in a merely mechanical manner. They seemed to be devoid of all idea of art. The turnery trade was one which experienced severe competition from the Continent, and even from America. It seemed to him that some of the examinations of the Science and Art Department and of the City and Guilds of London Institute were not quite practical,—not quite in accordance with the requirements of the crafts. He thought that the Science and Art Department, instead of giving two science certificates, should give a science certificate and an art certificate.

The Rev. Henry Solly said that he thought the Association was to be congratulated on the work of organisation it had already accomplished. No technical education was worth anything unless it was in some way illustrated and enlightened by the workmen themselves. Mr. Barber had alluded to the exhibitions of work for which prizes were offered by the Turners' Company, and he (Mr. Solly) must say that he was as much struck with the excellence of the workmanship as with the bad taste of most of the models themselves. As to the apprenticeship system, it was now looked upon by general consent as having broken down; but was it not possible, if not to revive it, at any rate to provide some substitute for it? We had only to look across the water to Germany to find that apprentices there had to be taught so thoroughly that they could not get their indentures after serving their time unless they passed an examination to test their fitness as workmen, and without their indentures they could not get work nor join the important trade societies.

The Chairman said he believed that was altered now,—that the examinations were abolished.

Mr. Solly expressed his surprise at this, and said that if they had been abolished it must have been quite recently.

A gentleman in the room said that he could confirm what Mr. Solly had said about these examinations. They were, to the best of his belief, necessary at the present time. They certainly were so in Leipsic.

Mr. Millis said that the late Sir William Siemens not very long ago at the City Guilds' Institute spoke of the trade guilds of Germany, but he did not think that he led them to suppose that the examinations which had been spoken of were still maintained.

The Secretary (Mr. Channon) said he decidedly understood Sir William Siemens to say that the examinations were abolished in Germany.

Mr. Solly, continuing, said he believed that not only were workmen subject to examinations as to technical fitness, but foremen, and even masters. For instance, no builder in Germany could go into the building trade without having passed an examination to prove his competency. If such a law were introduced in this country we should not have inflicted upon us so many "jerry"-built houses. In connexion with

* See p. 144, *ante*.

* The St. Mark's Classes for Carriage-builders, George-street, Oxford-street; teacher, Mr. J. Robertson.

building, he might mention that he was talking some little time ago with one of the largest employers in the building trade in London. He referred to the Chairman of the Master Builders' Association, Mr. Stanley Bird, who appealed to him to know whether he could not tell him where he could get a few apprentices to go into the building trade. It seemed that the Tylers' and Bricklayers' Company in the city had a sum of 150*l.* waiting to be devoted to the apprenticeship of lads to those trades, but they could get no applicants. But even if the old system of apprenticeship were revived, how were the apprentices to get taught? Certainly they would not get taught in the workshops under present conditions, for it was nobody's business to teach them, except in some branches of the engineering trades, and even then the work was very imperfectly done. Possibly the system of apprenticeship might be usefully revived under conditions, to be set forth in the indentures, by which the master would undertake to see that his apprentices joined technical classes in connexion with their respective trades. One difficulty in regard to the obtaining of skilled workmen in the present day was no doubt the prejudice which existed in some establishments against the employment of boys. A large employer of labour was conversing with the Clerk of one of the City companies some time ago on this question, and he said, "Oh, we never have any boys in our shops; they are such a nuisance!" Upon which the clerk of the company said, "How can you possibly expect to get good workmen if you will not have boys and train them up to the work?" Allusion had been made to trade unions. There was no doubt whatever that trade unions had a very heavy responsibility in this matter, and he did not think that they were sufficiently alive to the duty which devolved upon them in regard to it. If they kept up the standard of wages, which they had a legitimate right to endeavour to do, they were certainly bound at the same time to keep up the standard of fair workmanship. It seemed to him that unless they did that they were evading their work and shirking their responsibility.

Mr. H. D. Richardson, in moving a vote of thanks to the Chairman, said the objects of the Association might be summed up by saying that they did not want to see the English workman learned with book-learning only, but they wanted to see him skilled in the use of his fingers. He regretted, however, to hear the suggestion which had been made by one speaker about taking children from the Board schools and giving them technical training. Such a course could not fail to arouse the enmity of the workmen, who would resent being brought into contact with large numbers of half-instructed boy-workers. The work of these classes must be supplementary to that of the workshop. Perhaps one reason why this movement in favour of technical education had not progressed as fast as could have been wished was that it was a movement which came, perhaps necessarily, from above. Personally, he was strongly disposed to think that the work of the Association should be carried on as a propaganda, rather than by the premature establishment of a number of small classes scattered over the country.

Mr. Hanniball seconded the vote of thanks.

Mr. F. T. Mullett said that, as a surveyor, he had had much experience in superintending the operations of large bodies of workmen. He found that various excuses were alleged on the part of workmen for not attending science-classes, but he thought the real explanation was to be found in the fact that the apprentices and boys came to work immediately on their emancipation from school, and as soon as they had done their work they liked to feel themselves free from all restraint. That feeling was indulged for many years, until the apprentices grew into mature workmen, and then they naturally felt a distaste for joining classes. One or two speakers had touched upon the reason why trade unions had not taken up the question of technical education. He did not see why they should take it up. Their opposition to technical education was only the legitimate outcome of their principles. Trade unionism had certain grades or castes, but the unions were mainly ruled by the trade delegates, who were the medium of communication between the members and the great political leaders. These delegates were not necessarily superior craftsmen, and some of them might possibly think that with the spread of technical education they would be likely to be ousted from their positions. He was glad that Mr. Harland had touched upon what he believed to be the keynote of the whole thing, that the school and the workshop must go together. He did not know how much money was spent annually by the Science and Art Department, but he knew it must be a vast sum; and he knew from what he saw about him that it was wasted. The examinations, as conducted, did not always enable the best man to pass. If a teacher had a large number of pupils under technical instruction in a workshop, they would carry back a great deal of what they learned to those who were not attending the classes, and the boys would learn very much there from the mere instinct of copyism, so that if a teacher had a hundred pupils being taught in this way, it might be taken for granted that he had 150 or 160 learning from him.

Captain Pfoundes suggested that it would be as well for the Association to promote the foundation of an art class to teach the workmen who were engaged in paperhanging and the internal decoration of houses a knowledge of at least the rudiments of good taste. Such men were often sent away to do small jobs without any skilled supervision, and they were frequently quite incompetent even to decide what papers were best fitted for inferior rooms, and what would be best fitted for the more important rooms. The result of their want of knowledge in this respect was often exceedingly unsatisfactory. The same want of taste on the part of English workmen was felt abroad. He had had occasion to have a small museum for the display of objects of Oriental art fitted up in New York, and in the internal decorations and fittings of the premises he had been compelled to employ French and German workmen in preference to Englishmen, simply because English workmen were most deficient in taste. In mentioning this fact to a firm in New York he was told that his was only a common experience.

After a few further remarks from other members the proceedings terminated.

ARCHITECTURAL ASSOCIATION.

VISIT TO THE GUILDHALL COUNCIL CHAMBER.

The first of the Saturday afternoon visits by the members of this Association was made last Saturday, the 26th ult., to the new Guildhall Council Chamber. Notwithstanding the great inclemency of the weather,—it being a very wet and stormy afternoon,—the members assembled at three p.m. in pretty strong numbers, and every portion of the new chamber from basement to roof (or rather dome) was minutely inspected by them. As this building has been so recently illustrated and described in our pages,* it will be unnecessary to say any more on the subject. As our readers are aware, the works are being carried out by Mr. B. E. Nightingale, of the Albert Embankment, from designs by Mr. Horace Jones, the City Architect.

NEW OFFICES, 4, FENCHURCH-AVENUE.

The members next proceeded to Lime-street, E.C., to inspect some offices and chambers recently erected at No. 4, Fenchurch-avenue. Here they were met by Mr. Alfred Howard, the architect of the buildings, and who proceeded to explain the drawings and chief features of the erection. This consists of a spacious block of buildings of three floors, besides the ground-floor and basement, with two elevations, one in Fenchurch-avenue, and the other to the churchyard, being the flank, and faced with white bricks and stone dressings. The front elevation is faced with Portland stone, and has red polished granite pilasters and columns. The principal difficulty the architect has had to contend with has been to avoid obstructing the neighbours' light, and at the same time to obtain a maximum amount of light for the whole of the offices and chambers, which are erected for the accommodation of brokers and merchants, and are situated in very narrow and cramped up thoroughfares, and surrounded by very lofty buildings. Altogether the architect has succeeded fairly well in surmounting the difficulties of site. The several offices and chambers on each floor are reached by corridors paved with mosaic paving and stone staircases, with neat and strong ornamental cast-iron balustrading by the Coalbrookdale Company. The whole of the work has been executed from the designs of the architect, by Messrs. Colls & Sons, builders, of Moorgate-street.

* See vol. xlv., pp. 639, 720, 723.

WEST LONDON SCHOOL OF ART.

The presentation of prizes to the students of the West London School of Art took place on the evening of Thursday, the 24th ult., in the Steinway Hall, Seymour-street, Portman-square. Mr. G. A. Thrupp occupied the chair, and Mr. J. Comyns Carr made the distribution.

Mr. J. S. Rawle, the head master, read his report for 1883, which stated that the school had gained a much higher position than in any former year. Although the number of students had somewhat decreased, yet there had been a satisfactory increase in the fees. In the "National Art Competition" the school had gained twenty awards as against fifteen in 1882, and had, in fact, obtained nearly 28 per cent. of the total number of national medals, &c., awarded to the sixteen Metropolitan district schools of art. In the Government third grade advanced examinations for 1882, the school stood first in the kingdom, and it had gained the highest Government grants among individual schools. The "Mence-Smith Travelling Studentship," of the value of 50*l.*, had been awarded to Carl Almquist, who is spending two months in Italy for the purpose of studying decorative art. The committee expressed their thanks to Mr. J. H. Donaldson for the loan of art objects, and to Mr. Crace for the loan of books on art.

The Chairman remarked that the success of the school was mainly owing to the exertions of Mr. Rawle. Such a school was a necessity in a large borough like Marylebone, and they were compelled to rely somewhat upon extraneous assistance in order to keep up its efficiency. He trusted, therefore, that a large number of the wealthy persons living in the borough might be induced to help the education of the youth of the locality so as to enable them to take a prominent part in the great industries of the day.

Mr. J. Comyns Carr then delivered an address to the students, in the course of which he said that our countrymen seemed at last to be awakening to the importance which the study of art holds in the scheme of our national life. It was a necessity which, if they were to compete with other nations, must be had at whatever cost, and a necessity which they began to feel even without the thought of competition. His relationships had taken him into other towns besides London, and he had observed not merely a gradual awakening in relation to private enterprise, but a new perception on the part of the municipalities in this matter. We had long prided ourselves upon the virtues of private enterprise, and what was being done in this school was an admirable instance of what could be done by private enterprise, seconded, as it must be, by the devotion of those for whom it was established. At the same time, private enterprise was a bad thing when it stood in the way of public spirit. In England we had too often complacently swallowed compliments on the virtues of private enterprise, and had forgotten that if it was to succeed, it must be backed up by public spirit, which, although equal to the support of other matters, had not always been equal to the legitimate support of the necessities of art. About a year ago he made a journey through France, for the purpose of examining and investigating what was being done in the museums and schools of art throughout the provinces. The result of that journey was in many respects a surprise. He found in nearly all the towns he visited a long-founded and well-established tradition. Each municipality had its museum and its art school, supported out of the municipal funds, and in which an art education, of varying value, —but never without value,—was accessible to all the students of the town, free of expense. Thus for years and years the French nation, in its provincial, as well as in its metropolitan life, had recognised this as one of the prime functions of municipal duty,—not merely to clean the streets and protect its citizens, but also to supply the townships with the necessities and claims of art. In this country there was much to do in making art an integral part of the national life, permeating not only the upper and middle classes, but reaching the artisan class, and giving a new sense and value to their labour. He did not consider that the English people had an inferior genius for art.

They were constantly told that it was the sky of Italy which produced its great art, but it had never been explained how, with its lovely climate still enduring, Italian art had perished. Even M. Taine told them that the climate and sunlight of Venice had produced the colouring of Titian and Giorgione, but he had not explained how Milan, with a climate as bright and sunny, had produced a school of art without any reference to the richness of colour noticeable in the Venetian school. They were, therefore, led to the conclusion that art in its last resort was dependent on the spirit and work of man, and he believed that if the people of this country, with its splendid record of imaginative literature, its noble roll of poets, its heroic history, and its magnificent art architecture, chose to address themselves to the study and pursuit of art, allowing it to enter into their lives, and insisting upon learning from all other nations, there was no reason, either in their climate or their genius, why they should not rise to the very highest position yet achieved in that direction. They must remember that art was not to be got suddenly, and even amongst the most favoured nations it had been the result of long tradition and earnest seeking, and he believed it to be within the reach of the people of this country. The student, upon entering on his career, could not look too high. Every bit of design nobly done involved a knowledge of the very highest and subtlest sense of beauty, and those who had entered on the study of art would never find cause to regret it, and whilst conferring pleasure, it would also give pain. If the spirit of beauty really entered into their hearts and lives, it would beget not merely a new pleasure and profit, but also a newer and keener sense of pain in regard to the suffering and squalor of the century in which they lived. The spirit of art in this sense was something more than a trade or profession: it was something by which, in endeavouring to make their own lives nobler, they would be impelled to look on the lives of others less fortunate than themselves, and to try and benefit them.

Mr. Carr then presented the prizes, of which there was a very large number.*

In the National Art Competition, the following were among the awards made:—

Gold Medal (*and 10l. worth of Books on Art*).—Design for tiles, William H. Woodall.
Bronze Medal.—Decoration of a Room, Carl Almquist.†
Bronze Medal.—Design for a Wall-paper, Charles G. Edwards.
Bronze Medal.—Historic Styles of Ornament, Leonard Wyburd.
Queen's Prize.—Design for Wrought-iron Gates, Matthew Garbutt.
Queen's Prize.—Figure Designs for Panels, Henry A. Pegram.
Queen's Prize.—Design for Ceiling Decoration, Henry A. Tidmarsh.

A National Scholarship, of the annual value of 52*l.*, was awarded by the Science and Art Department to Francis X. Abraham; and in the Owen Jones competition, the first prize, out of six offered for competition by the Society of Arts, together with the Society's Bronze Medal, went to William H. Woodall.

Mr. Donaldson proposed a vote of thanks to the masters of the West London School of Art, and paid a high compliment to Mr. Rawle's energy and ability.

Mr. Rawle, in reply, said that the masters were deeply thankful for the manner in which the students had done their part of the work. No fewer than 133 out of a total of 491 students had carried off prizes or certificates. This proportion showed how hard they had worked, and he believed there was no other school which could show a more favourable percentage of successful students.

Votes of thanks to Mr. Comyns Carr and to the Chairman closed the proceedings.

Glass Slabs as a Remedy for Damp Walls. The suggestion is made in a German contemporary that in order to prevent the unpleasant dampness of walls and the exhalations arising from aphronitre, it is advisable to cover the places in question with glass slabs of the most ordinary quality. They are firmly fixed with cement to the wall, and a thick coating of mortar is applied to protect the glass from concussion.

* It being impossible to exhibit a fair proportion of the students' works in the hall, it was announced that there would be an exhibition of them in the school buildings, 155, Great Titchfield-street, this Friday and Saturday, Feb. 1 and 2.

† This student receives books only, as he has previously gained a Medal in the same stage of study.

THE INFLUENCE OF CEMENT MORTAR ON LEAD PIPES.

INVESTIGATIONS reported in the *Metallarbeiter* have demonstrated in an exact manner the appearances which are noticeable when a lead pipe has been for five years in a layer of Portland cement. A red coating was noticed from 1-24th to one-eighth of an inch in thickness, the appearance of which corresponded with that of oxide of lead as it is usually delivered in commerce. This coating was carefully removed and the particles of lead removed along with it were separated by means of a magnifying glass. The specific gravity of this powder (carefully defined at 59° Fahr. and reduced for a vacuum) varied between 8·002 and 9·670. This variation is explained by the presence of metallic lead mixed in the oxide of lead and of carbonate of lead. Qualitative analysis demonstrated that this powder contained oxide of lead, lead, carbonic acid, water, and traces of calcium. The composition of the powder was as follows:—

Oxide of lead	84·89
Lead	12·33
Water	0·99
Carbonic acid	1·53
Lime	Traces.
Insoluble in nitric acid	0·16

This coating on the lead pipe appears to have been formed by the action of the oxygen in the air in union with that of the lime contained in the mortar. It is remarked that the action of lime-water on lead has also been noticed by Besnon.

LEICESTER SOCIETY OF ARCHITECTS.

THE eleventh annual meeting of this society was held on the 22nd of January, when the following officers were elected:—President, Mr. W. Jackson; honorary secretary, Mr. A. H. Paget; council, Mr. R. J. Goodacre, Mr. Josh. Goddard, Mr. W. Millican, Mr. J. B. Everard.

In the couse of his address, the President made the following remarks, with reference to a recently-advertised competition:—"There is one subject which is probably uppermost in your minds, and which will not come before you in the report. The report deals of course with events and proceedings of the past year, and the subject of architectural competition has but recently been forced upon your notice; upon this subject I must be allowed to make a few remarks. Some years ago it was generally supposed that if a man, or a society of men, wanted to get the most work out of the architects for the least money, the proper thing to do was to go in for what is called an open competition. It was believed that it was only necessary to draw up a set of absurd conditions, and advertise them, with a bait of 20*l.* or 30*l.*, in order to catch any number of architects as in a net,—a net spread in the sight of all men. Experience soon proved, however, the inutility of such proceedings, not only from the point of view of the architects, but from that of the employers themselves; open competition was found to degenerate very often into a scramble, and to develop work which was showy and superficial rather than good, and, as a matter of fact, open competition, except in special cases, and under well-ordered conditions, has already ceased to be the rule. But the old ideas linger, as old ideas are apt to do, from ignorance and prejudice in certain places; and thus, from time to time we are surprised by a publicly advertised competition, which revives the worst traditions of the past.

The principle laid down by the Institute is perfectly clear. The actual and final competition should be limited, and each competitor should be paid for his work; the drawings should not be more in number, or to a larger scale, than is necessary to explain clearly the design; there should be no playing fast and loose with the author of the premiated design, and there should be a properly-qualified judge.

Now, with respect to a competition recently advertised by the Town Council of Leicester, and which your Council does not consider satisfactory, you will observe that the above conditions, which have been drawn up and sanctioned by the Institute after a long and careful study of the subject, are not complied with; on the contrary, the selection of designs is intrusted to a sub-committee, who will report to the Estate Committee, who, assisted if they see fit by a professional architect, will make selection of two designs for the Town Council, who will make the final decision, who will also reserve to themselves full liberty of action with respect to all proceedings in connexion with the proposed buildings, and are not bound by anything done under or in connexion with the competition, except the payment of premiums. Some troublesome rights of light are involved with which intending competitors are instructed not to interfere, or render the Corporation liable for damage. Each design is to be drawn to a large scale, 6 ft. to an inch, the sizes and heights to be marked in figures, and is to consist of a plan of each floor with sections, together with three elevations and a perspective view, accompanied by a written description, setting forth in detail the character of the material and workmanship, and an approximate estimate of the cost. The first premium of 25*l.* is to merge in the commission, if the author of the premiated design is employed to carry out the work, and in that case the commission is to be considered as payment for all matters or things arising out of or connected with the erection and completion of the buildings. The premiated designs are to become the property of the Corporation, and the whole of the subsequent contract drawings and specifications are to be given into the possession and to become the property of the Corporation, who reserve the right to reject the whole or any of the designs if they should appear unsuitable or of too expensive a character."

GLASGOW INSTITUTE OF ARCHITECTS.

PROPOSED BURGH BUILDING ACT.

AN Extraordinary General Meeting of the Glasgow Institute of Architects was held on the 23rd ult. for the purpose of considering the draft of a proposed Burgh Building Act,—Mr. James Thomson, F.R.I.B.A., president of the Institute, in the chair.

Mr. William MacLean, writer (the hon. secretary), read the correspondence with the Lord-Advocate as to the proposed Building Act, in which his lordship stated that he would be glad to receive a proof of the draft Act, and thereafter to receive a deputation from the Institute on the subject.

The President said they would doubtless remember that a deputation from this Institute, consisting of Mr. John Honeyman, Mr. Campbell Douglas, and himself, waited on the Lord-Advocate in London on the 29th of June last, to impress on his lordship the Institute's views on the desirability of having a Building Act apart from the proposed Police Bill in Scotland. He having expressed a wish to avoid some of these proposed details more fully before him in writing, the draft Act now to be considered had been prepared by the Council. Some months ago he convened a committee appointed by the Council to consider the subject. Afterwards several meetings were held, and the matter was fully discussed. He thus procured some very valuable suggestions which were embodied in the Bill now to be considered. He was glad to say that it had been endorsed unanimously by the Council, and he hoped it would be adopted by the Institute with the same unanimity, especially as they were all cognisant of the cogent reasons that had been advanced first and last by the Institute for the reform being of the radical nature proposed, instead of trying to patch up and improve the present Acts. He was decidedly of opinion that the members of their profession were the proper parties for the framing of such an Act, and the Institute had taken up the matter solely *pro bono publico*, and it had done so alone, without alliance or understanding with other bodies interested in lands and buildings. They were alive to the fact that some gentlemen who had had great experience,—as, for instance, Mr. Honeyman,—went even further than this, and advocated that all the Building Acts throughout the country should be swept away, and that the Legislature should provide an Act applicable to all buildings throughout the United Kingdom. Undoubtedly this reform would be a desirable one, and in many respects a considerable boon to the public; but he was doubtful if the time had arrived yet when town councils and corporations were prepared to surrender their legislative powers to Imperial Parliament. They would, for the present, receive with thankfulness such an Act as the one proposed by the Institute, as it would very materially tend to remedy the evils they had over and over again alluded to. There were a few points in the Bill to which he would call special attention. In section 16 important regulations as to the projections were suggested. In section 29 it was proposed to furnish to the Dean of Guild Court a ground or block plan only. Section 33 contained provisions for the prevention of overcrowding. At present there are many more dwellings on each stair landing allowed than the Institute aimed at having under this section. Sub-section 19 related to factory stairs, and sought to give protection and means of escape to the workers in such buildings in case of fire.

On the motion of the President, seconded by Mr. Sellars, it was unanimously agreed to adopt the draft print of the proposed Building Act submitted to the Institute, and the Secretary was

instructed to forward a copy of it to the Lord-Advocate.

On the motion of Mr. Sellars, seconded by Mr. W. F. M'Gibbon, the following were appointed as a deputation from the Institute to wait upon the Lord-Advocate to give his lordship any explanation he may desire, viz. :—James Thomson, president; Campbell Douglas and John Honeyman, past presidents.

On the motion of Mr. David Thomson, seconded by Mr. Brombead, a committee, consisting of the whole Council and the past presidents and vice-presidents, was appointed to take charge of the architectural examinations, about to be held in Glasgow, of candidates desirous of qualifying for the Associateship of the Royal Institute of British Architects, Mr. Campbell Douglas to be convener, and Mr. T. L. Watson sub-convener.

On the motion of Mr. David Thomson, seconded by Mr. Landless, a vote of thanks was awarded to the president for the great time and attention he had bestowed in connexion with the preparation of the draft Building Act.

ART IN THE HOUSE.

LEEDS AND YORKSHIRE ARCHITECTURAL SOCIETY.

MR. R. W. EDIS, F.S.A., delivered an address before the Leeds and Yorkshire Architectural Society on Monday evening last, on the furniture and decoration of ordinary houses. In the course of his remarks, Mr. Edis insisted strongly that while everything in the house might and should be beautiful in form and harmonious in colouring, there was no necessity that good artistic treatment of wall and floor surfaces, and of the general fittings and furniture, should involve any greater outlay in mere cost than if everything were of the ordinary common-place and inartistic character; and that while everything might be beautiful and good in taste, common sense and fitness for the wants and necessities of everyday life should be the first consideration. He regretted that the architect or chief designer of the house was not more extensively employed to advise on the clothing of the rooms he had designed, but insisted strongly that before he could gain the confidence of the public in matters of taste he must prove that he himself possessed the artistic culture, knowledge, and taste by which he might fairly claim a right to advise, and that too often common sense was superseded by some outlandish craze, which under the name of "æstheticism," or fashionable ignorance, led to peculiarities and eccentricities in design which were neither beautiful nor useful. Mr. Edis urged upon his audience the advantage—if only from a health point of view—of having the general fittings of the various rooms so designed that they should offer no large surfaces for the accommodation of dust and dirt, which could not be at once seen and got rid of, and especially condemned the ordinary wardrobes and bedroom furniture, which provided any amount of dust-traps, injurious to health, cleanliness, and comfort.

THE HOSPITALS ASSOCIATION.

THE following will be the order of proceedings at the inaugural meeting of this Association, which is to take place in the Egyptian Hall of the Mansion House, on Friday next :—The Lord Mayor will take the chair at three o'clock, and after a statement by Major Ross, M.P., the chairman of the Provisional Committee, in explanation of the objects and scope of the proposed Society, the following resolutions will be submitted :—

1. That in the opinion of this meeting it is desirable to establish, under the name of the Hospitals Association, and on the basis of the constitution prepared and adopted by the Provisional Committee, an organisation for the consideration and discussion of matters connected with hospital management.
2. That the preliminary arrangements connected with the establishment of the Association, including the appointment of the first council, be entrusted to the Provisional Committee.
3. That the best thanks of this meeting be given to the Right Hon. the Lord Mayor, for placing at the disposal of the Provisional Committee the use of the Mansion House, and for his courtesy in presiding over the proceedings this day.

The speakers will include Earl Stanhope, Lord Frederick Fitzroy, Sir T. Fowell Buxton, bart., Sir Rutherford Alcock, K.C.B., Mr. Timothy Holmes, and others. The Provisional Committee desire very specially to invite the attendance of hospital governors and subscribers, and of the clergy, ministers, churchwardens, and other officials connected with congregations contributing to the Metropolitan Hospital Sunday Fund. A large number of cards of admission have been issued and applied for, and the secretary of the Association, Mr. J. L. Clifford-Smith, will gladly supply more if those desirous of being present will communicate with him. The office of the Association is at No. 1, Adam-street, Adelphi, W.C., where further information can also be had.

INTERNATIONAL HEALTH EXHIBITION, LONDON, 1884.

THE Sub-Committee on Water Supply and Sanitation have prepared a memorandum on the exhibits which are sought for Classes 21, 22, 23, and 27 of Group 3, "The Dwelling." With a view to bringing before the public examples not only of thoroughly good sanitary arrangements, but also of the defects existing in ordinary houses, the Committee have, with the sanction of the Executive Council, undertaken to supervise the erection of two model dwellings in the grounds of the exhibition, one of which will show, as far as can be done on the limited scale, a house with good sanitary arrangements, while the other will show the usual defects. In the latter case, no attempt will be made to exaggerate the ordinary conditions; but the object will be to reproduce accurately a state of things unfortunately but too common. Besides these typical illustrations, the Committee will be glad to receive from manufacturers whatever examples they may think proper to submit for exhibition of the articles indicated by the classification. It is to be borne in mind that in all cases the exhibits must have a distinct bearing upon health, and that architecture or building construction generally is outside the scope of the exhibition. The exigencies of space will not permit the Executive of the exhibition to invite contributions illustrative of schemes for drainage, water supply, &c., applicable to towns or large districts, and it is, therefore, to be understood that the exhibits must be confined to domestic sanitation alone. The Committee would impress upon exhibitors the desirability of, as far as possible, exhibiting their own manufactures only, not those of other makers; and also of restricting their exhibits to typical examples of their appliances, and of not sending more than a single example of each article. Indeed, the Committee cannot undertake to find space for things which are substantially duplicates of one another. As the exhibition will be a place of popular resort, and is intended for the instruction of the general public rather than specialists, it will be desirable that exhibitors of sanitary wares should assist the Committee in making such arrangements as will bring the articles which it is necessary to show before the notice of the public in a manner as agreeable as possible. It will, of course, be necessary to show examples of closets, urinals, &c., but these should be so arranged that while it may be possible for anybody desiring to inspect their action to have full opportunity of doing so, they yet will not attract general attention in an undesirable manner.

A memorandum prepared by the Sub-Committee on the construction and fittings of the dwelling-house has just been issued. The committee think it should be distinctly understood, with regard to all the classes in which are to be shown buildings, furniture, fittings, &c., that only such exhibits as have a distinct bearing upon health can be admitted. Specimens, therefore, illustrating building construction generally, the decoration of houses, or their furniture, cannot be admitted unless they are shown to have actual reference to the health of the inmates of the houses. It is desired that exhibitors should show, as far as possible, their own manufactures only, and not those of other makers, and they should restrict their exhibits to typical examples of their appliances, not sending more than a single example of each article. It is desired to show not only models and designs for sanitary houses, but also, so far as possible, specimens showing their construction. It is desirable that those exhibitors who are prepared to erect specimens of actual buildings should, as far as possible, co-operate with other exhibitors who may be desirous of showing fittings or furniture for such buildings. The executive will, as far as possible, facilitate such arrangements, but it will be well that the exhibitors should agree between themselves as to the manner in which such collective exhibits may be arranged. Under the proper class may be included, in order to draw attention to existing defects, specimens of insanitary decoration, such as arsenical wall-papers, hangings, &c., so that the public may be taught what to avoid. Special interest would attach to any evidence of equally good effects being obtained by the use of harmless materials, and in many cases it may be desirable to show side by side, for purposes of comparison, papers, fabrics, &c., treated with poisonous colouring matters, and also with colouring matter of a harmless character. One of the classes includes all appliances for personal cleanliness, public and private baths, &c. It is hoped that a full display of these may be forthcoming. The Executive Council have had under consideration the question of fitting up baths for actual use in the Exhibition, as was done in the Berlin Exhibition, but it has been decided that it would be sufficient to show baths completely fitted, without putting them into action.

The Sub-committee on Dress have prepared a memorandum showing the class of exhibits which is desired for that group. The classification includes collections illustrative of the history of dress, national costume, &c.; waterproof clothing, india-rubber, gutta-percha, &c.; dresses for extreme climates, &c.; dress for sport, hunting suits, &c.; life-saving dress, divers' dress, fireproof dress, &c. There is also a special class devoted to the comparative value of different dress materials for articles of clothing. Under it should be displayed a number of illustrative specimens to show the comparative value of different dress fabrics with reference to their warmth, their hygroscopic properties, the influence of the colour of materials in modifying the effects of sun-heat, and the like. It would be well to show under this class models and drawings illustrative of the effects of poisonous dyes (in clothing) upon the skin. Materials dyed with poisonous and non-poisonous dyes could be placed together for purposes of comparison. The Sub-Committee are prepared to arrange for a special display of materials and garments, &c., worn next to the skin. Some of these will be shown in a special annexe, to which females alone will have access, or which will, at least, not be open to both sexes at one time. As one special feature in such an exhibition, the Sub-committee would suggest a series of models displaying the first clothing of infants as adopted in the various countries in the world,—as far as such examples could be obtained. Special attention will be given to dresses suitable for women engaging in exercise, such as dresses for mountaineering, for the moors, for swimming, for horse exercise, for gymnastics, and the like. Under the class devoted to life-saving dress, &c., should be actually demonstrated the value of certain substances used for making muslin and like fabrics non-inflammable. The various artificial starches made for this purpose should be displayed, and their use and effect demonstrated. The dress of female operatives engaged among machinery may be dealt with in this class, also special dresses recommended or in use in factories and occupations of special character, *e.g.*, dresses for lead and other factories, dresses of nurses and sick attendants, of soldiers and sailors, life-saving dresses, firemen's dresses.

THE INSTITUTION OF CIVIL ENGINEERS.

AT the ordinary meeting on Tuesday, the 22nd of January, Sir Frederick Bramwell, F.R.S., vice-president, in the chair, the paper read was on "The Adoption of Standard Forms of Test-Pieces for Bars and Plates," by Mr. William Hackney, B.Sc., Assoc.-M. Inst. C.E.

In breaking test-pieces of the same quality of tough metal by direct tension, very different results were obtained according to the form of the test-piece employed. The sample that one engineer would define as stretching nearly 44 per cent., before fracture, was classed by another, using a test-piece of different form, as stretching less than 28 per cent. In fact, to obtain from any bar of metal relatively high percentages of ultimate stretching, all that was needed was to use short or thick test-pieces. Mr. J. Barba had shown, in a paper published in the *Mémoires de la Société des Ingénieurs Civils* in 1880, that test-pieces of the same form, namely in which the ratio of length to diameter was the same, gave the same percentage of ultimate stretching whatever their size might be; but that in those of equal length but differing in diameter, or of equal diameter but of different lengths, the percentages of ultimate stretching varied very much.

Notwithstanding the extent to which the result obtained in testing a sample of ductile metal was thus affected by the proportions of the test-piece used, no standard dimensions or proportions for such pieces had been generally adopted, and those in common use varied very much. Sir Joseph Whitworth, for instance, advocated the use of a test-piece 0·798 inch in diameter by 2 inches long, or 2·51 diameters long, and the test-piece in use at Woolwich Arsenal was 3·75 diameters in length. From these proportions the ratio of length to diameter was increased in the test-pieces adopted by different engineers, especially on the Continent, to 10 or even more. The ultimate stretching of test-pieces cut from the same bar of mild steel, similar in form at the ends and of these different proportions, would be :—

Ratio of length to diameter.	Ultimate stretching per cent.
2·51	44·5
3·75	37·5
10 00	28·2

The proportions of the strips, in which plates and flat bars were tested, had almost as great

an influence on the percentages of ultimate stretching, as had the proportions of cylindrical test-pieces, and those in general use varied nearly as much.

Mr. Barba showed, that in the case of pieces cut by lathe or planing-machine from the same bar of metal, the law of similarity, that was the law that test-pieces similar in form gave the same percentage of ultimate extension, whatever their size, was as strictly true in the case of flat as in that of cylindrical test-pieces. The effect on the percentage of stretching of the transverse dimensions of an ordinary strip of plate or flat bar, was not so great as in the case of a cylindrical test-piece, as in the strip, whatever might be the width, the thickness remained always that of the piece of metal tested.

Test-strips of mild steel plates, 0·5 in. thick and about 1·4 in. wide, that stretched 27·5 per cent. in a length of 8 in., stretched 37·3 per cent. if the measured portions were only 2 in. long; and in rather harder plates, which stretched 20 per cent. in a length of 8 in., the extension in 6 in. was 25 per cent., and in 4 in. about 32 per cent. The test-strips used at the Crewe Works of the London and North Western Railway Company were only 2 in. long, and those employed in some tests of boiler-plates made at Sheerness Dockyard in 1875, and at Chatham Dockyard in 1879, were 4 in. long; but the length of test-strips adopted for plates, both in this country and abroad, was almost universally 8 in.

The impossibility of comparing the results of tests made by different experimenters of the ultimate stretching of metals, in the absence of standard forms of test-pieces, had long been felt by engineers, and had led to the adoption of several alternative methods of comparing their relative toughnesses.

When a bar of ductile metal was stretched to breaking, it at first extended equally from end to end, with each successive increment of load, until the maximum load that it could carry had been reached, and up to this point the percentage of stretching was absolutely independent of the proportions of the test-piece used. This percentage of extension would thus appear to be the most important in comparing the structural values of metals, and to be that which should be always the most particularly noted; but practically testing in this way would be more tedious than the ordinary mode of loading the piece until it broke, and then measuring the elongation after fracture; so that in ordinary technical and commercial work, this latter plan would always be preferred.

Another method that had been adopted to a considerable extent, for obtaining comparable measurements of the toughness of metals, without using test-pieces of uniform proportion, had been to measure not the linear stretching, but the percentage of contraction of area at the point of fracture. Practical objections, however, to this were, that the contraction of area could be much less accurately measured than the increase in length, and that as a tough piece of metal often broke irregularly, it might be difficult to determine what its exact diameter at the point of fracture should be taken to be. Whether on account of the difficulty of accurate measurement, or owing to the percentage of contraction of area not being exactly proportional to that of stretching, it was certain that the results obtained by the two modes of measurement seldom precisely agreed.

A third mode of obtaining comparable results in testing by tension would be to use very long test-pieces and to reject the percentages of stretching near to the point of fracture; but this would be expensive, and often inconvenient or even impracticable, and would not always give accurate results; for a long bar, when stretched to breaking, often began to draw down simultaneously in several parts of its length. The use of comparatively short test-pieces of some standard forms, seemed thus to be the best method of making tests of the quality of bars and plates of ductile metal that could be employed.

The length of 8 in., in the testing of plates, was the only dimension of test-piece that appeared to be generally adopted; and as it was very desirable that the standard forms for cylindrical and for flat test-pieces should be such that the same metal might give the same percentage of stretching, whether tested in the one shape or in the other, this length, with a convenient width and an average thickness, might well be taken as the standard form, and that for cylindrical test-pieces be determined by experiment, so as to correspond with it.

The effect of hammering or rolling in increasing the toughness of metals was so marked, that in determining the shape of the cylindrical test-piece that would give the same percentage of ultimate stretching as the standard form adopted for plates, both shapes should be cut by lathe or planing-machine from the same bar, so that one might not be made from metal more drawn down than the other. This increase in the toughness of iron and steel explained the fact, that in testing plates and rivet-bars, it was found that metal of the same quality stretched nearly as much in test-pieces of the same length, whether the bars and plates were thick or thin. The use of a test-piece 8 in. long was a more severe trial for a thinner than for a thicker plate; but the toughness of the former had been so much increased by the greater amount of rolling to which it had been subjected, that the one stretched before fracture nearly as much as the other.

As test-pieces similar in form had been found to give the same percentage of ultimate stretching, whatever their size, it might be better to define the standard cylindrical test-piece rather as being of a certain form than of a particular length. This would facilitate the adoption of the same form by engineers of different countries, using different units of measure. In testing plates and bars such as rivet-bars, which were reduced to the size of the test-piece by hammering or rolling, it would be best to retain, as at present, one length of test-piece, whatever the transverse dimensions. In fixing the standard forms, the effect on the percentage of stretching of the distance from the datum points of the test-pieces of the shoulders or enlargements at the ends by which they were to be fixed in the testing machine, should not be overlooked. The enlargement might begin, for instance, half a diameter beyond each datum point, and its radius of curvature might also be half a diameter.

The whole subject of the testing of metals by tension seemed to be well worthy of consideration. If a uniform system of testing could be generally introduced, so that tests made by engineers in all parts of the world might be directly comparable, the advantage would be very great.

ANCIENT REMAINS IN CHANCERY-LANE.

ON this subject some interesting notes were recently read at a meeting of the London and Middlesex Archæological Society by Mr. Sachs. He said:—

"While travelling with a member of our society during an archæological excursion, we had some conversation about the excavations going on in Chancery-lane, which stimulated me to look out for the remains of buildings that might have belonged to the Knights Templars, as the Knights Templars, according to various authorities, first established the chief house of their order in England without Holborn Bars, on the south side of the street, where Southampton House formerly stood, adjoining which Southampton-buildings were afterwards erected. A few years ago the ground east of Southampton-buildings was excavated, and at the back of the present London and County Bank the foundations of the circular church of the Knights Templars were visible; south-east of these remains I first noticed a strong wall, which the masons had some difficulty in picking to pieces. Then a chamber composed of chalk was exposed to view, the walls of which were 2 ft. in thickness, and the area 8 ft. by 5 ft. 9 in.; the depth, after some of the upper part had been removed, was then 6 ft. 2 in. On a higher level, a little beyond, were the remains of another chamber, indicated by the remains of tiled flooring. Underneath this floor was a deposit of unburned charcoal, which may have been purposely deposited as a landmark. These remains are south-west of the church, and from the quantity of animal bones of oxen, swine, and goats, the chalk chamber may have been a storehouse for salted provisions, and the tiled room a portion of the refectory of the Knights Templars. Excavations more due east and west may probably show better relics of the ancient monastery. The Order next purchased ground west of Whitefriars, and consecrated the Temple Church in A.D. 1185. After this removal the ground was disturbed for the building of Southampton House, and the chalk and stone remaining about the ground was utilised for its foundations. The diggings developed abundant remains of walls of red brick of this edifice. Southampton House has the interest of being the residence of the Right Hon. Henry Wriothesley, Earl of Southampton, and Baron of Titchfield, to whom William Shakspeare dedicated his sonnet of 'Venus and Adonis.' This house was afterwards the residence of Robert Atkinson, grandfather on the mother's side to Thomas Wentworth, Earl of Strafford (secretary to Charles I.), who was born here on Good Friday, April 13th, 1593, and was executed at the Tower of London, May 12th, 1641. These foundations appear to extend in an angle of 45°, one end in Southampton-buildings and the other towards Chancery-lane. They are in the form of two strong walls, the width of each about 2 ft. 6 in., and appear to have been a long room or corridor 35 ft. in width. The houses which have and are being pulled down were erected on this side about A.D. 1675. The old foundations were utilised to build on; so there were three foundations one on top of another. The pottery found is of different dates; some Mediæval, such as tiles and candlesticks, and others of the period of James I. and Queen Anne."

BUILDING PATENT RECORD.*

APPLICATIONS FOR LETTERS PATENT.

Jan. 18, 1884.

1,686. W. P. Kelly, Mount Brandon. Apparatus for retaining in position window-blind rollers, &c.

1,690. J. D. Mackenzie, London. Sash-bars for roof lights, &c.

1,714. J. Girdwood, London. Fire-proof and artificially-cooled structures.

1,715. R. Stevens, Bromley. Three-bar system of glazing.

Jan. 19, 1884.

1,744. V. Skinner, and H. C. Board, Stokes Croft. Ventilation of horticultural houses and buildings.

1,759. E. Verity, J. M. Verity, and B. Banks, Leeds. Fasteners for casements, &c.

Jan. 21, 1884.

1,792. G. G. P. Brodie, Birmingham, and J. D. Prior, London. Fire-grates.

1,795. H. A. Phillips, York. Exhausting in ventilation, &c.

1,800. A. C. Smith, London. Exhaust chimney-top and roof ventilator.

1,807. J. Partridge, London. Window-blind fittings. (Comp. Spec.)

1,852. W. Harding, Exeter. Glazing greenhouses, &c. (Comp. Spec.)

Jan. 22, 1884.

1,859. T. Trotman and J. Carter, Stroud. Raising or lowering window-blinds.

1,901. W. Kay, London. Dwarf window-blinds.

1,903. F. W. Smith, London. "Tallboys" for preventing down-draught.

Jan. 23, 1884.

1,960. S. Welman, Godalming. Water-closet apparatus.

1,976. W. P. Buchan, Glasgow. Ventilating apartments.

1,986. A. Thomson, Strathbungo, and R. Anderson, Glasgow. Chimney-cowls.

Jan. 24, 1884.

2,005. W. Scott, Glasgow. Heating-stoves.

2,012. W. J. Penny, Southend. Sash-pulleys.

2,018. B. Horton, Wolverhampton. Spring-raising draught-preventer for door bottoms.

2,034. W. J. Penny, Southend. Fitting window-sash weights, &c.

NOTICES TO PROCEED

have been given by the following applicants on the dates named:—

Jan. 22, 1884.

4,490. S. van Campen, New York, U.S.A. Decorative tiles. Sept. 20, 1883.

5,388. H. A. Goodall, London. Blinds for windows, &c. Nov. 15, 1883.

Jan. 25, 1884.

5,659. W. P. Thompson, Liverpool. Seal traps for wash-basins, water-closets. (Com.

* Compiled by Hart & Co., Patent Agents, 186, Fleet-street.

by A. Edwards, Ashbury Park, U.S.A.) Dec. 6, 1883.

ABRIDGMENTS OF SPECIFICATIONS,

Published during the week ending January 26, 1884.

2,693. J. A. Meginn, Liverpool. Graining or ornamentation of painted or coloured surfaces. May 30, 1883. Price 4d.

The pattern required is formed in relief on a sheet of absorbent paper, which is laid on the freshly-coloured surface, and absorbs the colour on the parts in relief.

2,698. J. Waple, London. Chimney-tops and ventilators. May 30, 1883. Price 4d.

These have two sets of apertures in the pipe or tube placed at the top of the chimney or ventilator. The lower series are of a keyhole shape, and are covered with hoods closed at the top but open at the bottom, while the upper series are uncovered. Thus an upward draught is created.

2,733. J. Smith, Blackburn. Water-closets and apparatus connected therewith. June 1, 1883. Price 2d.

These have tipping basins, which, when sufficiently filled with water, capsize, and are emptied. (*Pro. Pro.*)

INTERNATIONAL HEALTH EXHIBITION 1884.

Sir,—There are many sanitarians in the provinces who think that the committee having the control of Group 3, "The Dwelling House," should have amongst its numbers some of the most eminent provincial authorities in addition to those of the metropolis.

For many years past the management of similar exhibitions (though on a smaller scale) seems to have been almost entirely in the hands of a few prominent London sanitarians.

It would be much more satisfactory to the class I represent, and, I venture to think, much more conducive to the complete success of the exhibition, if such representative men as the water engineer of Liverpool (Mr. Deacon), the consulting engineer of the Nottingham Corporation (Mr. Tarbotton), and the borough engineer of Birmingham, could be induced to take a prominent part in the management of Group 3, and in the judging of the exhibits.

Sanitary Engineer.

"A STORY OF CAPEL COURT."

Sir,—I was much interested in a paper called "A story of Capel Court," which appeared in the *Builder* for the 20th of last October (vol. xlv., p. 514), but beg you to contradict what is there said of Sir Giles Capel's tomb, namely, that it was "ruthlessly destroyed some forty-five years back." It was almost certainly destroyed in Cromwell's time, whose people fought near our church, and broke its statues in niches outside the tower; tradition says the pieces of the tomb were doubtless lying about, and Parmenter, the builder, had them. His son tells me that what he had was one whole side, about 5 ft. long and 2 ft. high, and some broken bits; none had any inscription. I have been collecting evidence on the subject ever since your paper came into my hands, about two months ago, through the good thought of a former servant, who had it by accident, and thought it would interest me. I am most grateful to her, and to you, for all means are now being tried in consequence, to get back our helmets, the pieces of the tomb, and the oak of the chancel roof, which was very massive and valuable. There was also a fine old oak chest, bound with metal, which we fear is beyond recall. As to the evidence with regard to the destruction of the tomb, it is this. Every one in the village who is over fifty, and has lived here from childhood, remembers the old church well, particularly the chancel, where two rows of schoolchildren sat; they are unanimous in saying that they remember two helmets, "soldiers' caps" most of them call them, hanging up on the chancel wall, touching it, as if on a little hook, one on each side, but no tomb, and they feel sure they should remember it; they tell me exactly what was in the chancel, and with their seats, two large pews, &c., there could have been no room for any more tombs than those still there, which are not raised above the level of the floor, and are now covered with tiles; one was a little raised, but was altered when the tiles were put down about fifteen years ago. I also wrote to the widow of the resident clergyman (Mr. Capell, the rector at the time, did not live here), and to a clergyman, a great authority on architecture, who was much here at that time, and protested very strongly against the pulling down of the old church, and their evidence is to the same effect. Our church is to be improved this year, and we hope when it is re-opened to have our helmets back again. It was a great pity that Mr. Capell and Lord Essex let their ancestors' armour go, and allowed the very interesting church to be destroyed, but I believe the Earl of Essex is doing all he can now to repair as much of the mischief as possible, though the main part is irreparable.

Is it certain that all the helmets were those belonging to the Capells? Armour has often been dug up in the fields where the skirmish took place in the time of the Rebellion.

Braintree. A. M. T.

VENTILATION.

Sir,—As a very considerable number of property-owners would like to ventilate their rooms if they had some authority as to the manner in which it should be done, I venture to ask you kindly to allow one or more of your readers to state what would be the best manner to ventilate say a dining-room, which has no special flue for the foul air extract, but only the ordinary smoke flue. At the same time short replies to the following, if not touched upon in the reply, would be of considerable help to us:—

1. Is a fresh air inlet, the air being taken from the outside at the same level as the inlet grating fixed in an elbow, of as much service as when the air is taken from the outside at the floor level, and taken up the wall for 6 ft. in an upright tube? My reason for asking this is that the tubes are very unsightly, but the elbow could be made an ornament?

2. Would a square 4½ by 4½ C. I. pipe taken up the house side, to say 4 ft. above the roof, be as effective as a flue built in the chimney stack?

3. Is there any good system of taking the foul air direct from under the ceiling to outside of the building on a level? J. W.

NEW R.C. CHURCH OF ST. MARY, HOLME HILL, GREAT GRIMSBY.

Sir,—In your issue of the 19th of January last, we observed a paragraph stating that a new altar and reredos, recently erected in the above church by the Hon. Mrs. Fraser, was executed by Messrs. Boulton & Son, "the whole being from the designs of Messrs. Pugin & Pugin, of London and Ramsgate," &c.

Now, this is worded so as obviously by implication to lead to the supposition that Messrs. Pugin & Pugin were the architects of the church; while the edifice in question was actually incomplete and in our hands, Mr. Boulton (who executed the marble and stonework of the high altar from our designs) having declined to prepare a drawing when asked to do so by the late incumbent.

M. E. Hadfield & Son.

Corn Exchange Chambers, Sheffield,
29th January, 1884.

THE CARPENTERS' EXHIBITION.

Sir,—Allow me, as a carpenter, to offer a remark upon the insignificant value of the prizes offered to exhibitors at the forthcoming competition. I will admit that the exhibition may not be without its value to us and to architects, but I do maintain that, considering the purpose for which the company was formed, its great wealth, and considering too the great trouble and expense the exhibitors will incur, the prizes are simply a reproach to the Company, and not a fair return for the workman's labour. The fact is, that some of our best tradesmen will be kept out of the competition because they cannot, in the present state of trade, afford to spend time and money in the production of models. I intend to submit a model which, with the drawings, will be worth 10*l.* Should I be successful (remote possibility!) I shall receive about half the value of my work and a medal. Would it not be fairer to present the medal and a sum sufficient to cover the cost of the model? The Company would then be entitled to the models, which would form the nucleus of a permanent and instructive exhibition. Of course I shall be told that we ought to think of the honour attached to receiving a prize. Well, "can honour set a leg"?

Henry Dunkley.

Female School of Art.—The Countess Granville has kindly consented to distribute the prizes to the students of the Female School of Art at Prince's Hall on the 5th February, in the place of the Duchess of Westminster, who has been unable to fulfil her engagement in consequence of the lamented death of Earl Grosvenor.

DEFECTIVE PARTY-WALLS.

Sir,—Permit me to draw your attention, and that of your numerous influential readers, to a danger which, at all events in suburban districts, is, I fear, waiting to add a great misfortune to dwellers in neighbourhoods distant from fire-engine stations. I condense the following cutting from a weekly newspaper, as it tends to show what thousands of persons are trusting to when a fire breaks out in their midst:—

"Early on Wednesday morning a serious fire broke out in —— road. The shop was occupied by a boot and shoe maker. In consequence of the great distance between the scene of the fire and the station, the firemen found the premises in one mass of flame, and the front room above the adjoining shop (a large oil and colour store) had also taken fire *through some defect in the party-wall.* The house where the fire originated was completely gutted, and the damage done next door was also of a serious character."

You have aimed many a blow at such shoddy buildings, and if you will kindly find space for this instance of insecurity you will be doing another service to dwellers in what are termed houses, which everybody will be grateful for. Perforated party-walls make these jerry-built dwellings positive death-traps. One Opposed to Cremation.

A CLAIM FOR BRICKS.

JONES *v.* TRUNDLE.

This was an action (tried at the Essex Winter Assizes on the 25th ult. before Mr. Justice North) to recover 40*l.* for bricks sold and delivered. The defence was a general denial of liability. The plaintiffs, Messrs. S. Jones & Co., are brickmakers carrying on business at Southend, and from the opening statement of their counsel it appeared that in April of last year they supplied bricks to Mr. James Vine, who had a contract to build some houses at Clapton for the defendant, Mr. Francis Trundle. On the 19th of May Vine wanted a second freight of bricks, but the plaintiff's agent refused to supply it without a guarantee of payment, and Vine thereupon wrote to the defendant, asking him to deduct from his (Vine's) accounts as they might become due sufficient money to pay to Messrs. S. Jones & Co. for the bricks supplied for the work. The plaintiffs also wrote to the defendant directing attention to Vine's letter. One or two other letters were written to the defendant on the subject, but no answer was received. Vine had become insolvent, and the money in the defendant's hands had been paid to the liquidator.

John Edwin Porter, the plaintiffs' agent at Southend, gave evidence as to the supply of the bricks to Vine, and as to the letter written to the defendant by Vine; on one occasion, he said, he saw Vine's letter in the defendant's hands.

James Vine, the builder to whom the bricks were supplied, confirmed the statements of the previous witnesses as to his having requested the defendant to pay for the bricks from his account, and said the defendant paid to the liquidator under his (Vine's) bankruptcy 250*l.* which he had in hand belonging to witness.

The defence to the action was, briefly, a denial that the letter from Vine requesting the defendant to pay the plaintiffs reached its destination, and further a denial that the plaintiffs' letters reached the defendant. The defendant, who now lives at Clapton, went into the witness-box, and stated that he did not receive Vine's letter or any letter from the plaintiffs until June 9, when he received one which he answered two days later. [This, according to the evidence for the plaintiffs, was the fourth letter sent to the defendant.]

The jury, without a moment's hesitation, found a verdict for the plaintiffs for the amount claimed, the foreman stating that they believed the defendant received Vine's letter.

His Lordship gave judgment for 40*l.*, with costs.

ADDITIONS AT WATERLOO STATION.

In addition to the successive enlargements which have been carried out at the South Western Railway Company's London terminus during the last few years, further works of a very extensive character are now in progress for the purpose of providing additional accommodation, more especially for the Windsor traffic. On the north side of the station, approached from York-road, a large block of buildings, three stories in height, and having a frontage upwards of 200 ft. in length, is on the point of completion. A considerable part of the ground floor of this range of buildings is intended for new booking offices, waiting-rooms, and other offices in connexion with the Windsor traffic, the future approach to the station for this section of the Company's traffic being exclusively from York-road. From the booking-offices a spacious platform, now in course of construction, is reached

This platform, running north and south, immediately to the west of the booking-offices and waiting-rooms, is 70 ft. in length and 36 ft. in width, supporting on iron columns and girders. The platform is in immediate connexion with an additional double line of rails now being laid on the north side of the present station area, this widening of the line being effected by the construction of a series of arches. The widening is intended to be continued westward to Clapham Junction, from which point, in the direction of Wimbledon, Wandsworth, Putney, and other districts westward, the doubling of the line is now nearly completed. In carrying out the widening of the line from Waterloo to Clapham Junction, Griffin-street will be crossed by a girder bridge, and between this point and Vauxhall the demolition of a very large number of houses and other buildings will be necessary, including the taking down of a portion of the Canterbury Music Hall, which was re-erected only a few years ago. Preparatory to the continuation of the work a large number of houses between Griffin-street and Westminster Bridge-road are now in course of demolition. The upper part of the new booking-offices is intended to be chiefly occupied by the company's engineer and his staff, whilst the basement, approached by a low level entrance in York-road, has already been taken possession of by the Government for parcels post-office purposes. The buildings are ultimately intended to be continued northwards to York-road, when they will have an entire frontage from north to south of about 320 ft., with a frontage in York-road of upwards of 250 ft.

The whole of the works are being carried out from the designs of Mr. Jacomb, the company's engineer in chief, the contractors being Messrs. Perry & Co., of the Tredegar Works, Bow.

STAINED GLASS.

Barnack.—Two large windows in the south aisle of Barnack Church have been filled with stained glass, in memory of the late Rev. Marsham Frederic Argles, B.D., Fellow of St. John's College, Oxford, who died of the effects of jungle fever on his return from India in May last. The execution of the memorial was confided to Messrs. Heaton, Butler, & Bayne, of Garrick-street, Covent-garden.

Cropredy.—A stained-glass window of three lights has lately been placed in Cropredy Church, by Mr. John Allitt, as a memorial of his wife. The subject is the death of the Mother of the Lord in St. John's house at Ephesus. The Apostles are grouped round the bed in attitudes of prayer and sorrow, while the Beloved Apostle, to whose care the Blessed Virgin had been entrusted, stands by the head of the couch. The window closely adjoins a similar memorial erected by Mr. and Mrs. Allitt to their only child. The artist of both was Mr. Westlake, of the firm of Lavers, Barraud, & Westlake.

Leighford (near Stafford).—The east window in Leighford Church has been filled in with stained glass, representing the subject of the Crucifixion. The window is in memory of Colonel Eld, and was designed and executed by Messrs. F. Holt & Co., of Warwick.

Books.

A Digest of Patent Law and Cases, incorporating the Provisions of the Patents Act, 1883. By H. A. A. GRIDLEY, Barrister-at-Law. Marcus Ward & Co., London. 1884.

EVERY new Act of Parliament, which is of any wide application either in regard to law or trade, very soon produces a number of commentaries, great and small. This is one of the progeny of the Patents Act, 1883, and falls within the category of small commentaries. It is a handy and convenient work especially adapted in our opinion to the use of laymen, and useful also to those lawyers who do not require to go into the subject very deeply, or who are satisfied to have the Act, and the chief decisions laid before them, and to go more carefully into the reports of decided cases for themselves.

It is a well-proportioned book; the little historical introduction is a good beginning, the comparison of the new and old procedure which follows is interesting, and the main part which comes next is well done. The manner in which Mr. Gridley arranges his materials may be shown by Chapter V., which is headed "The Complete Specification."

These words occur in several sections of the new Act, which are set out, and then follow a *précis* of a number of decisions, which throw light on the term "complete specification." We do not propose now to enter into a critical examination of the new Act; it is sufficient to give those of our readers who are interested in the subject our view of one of the works which touch upon it. The main objection which we have to Mr. Gridley's work is the fact that the Act does not appear consecutively anywhere either in the text or in an appendix. However useful such a book as this may be it always elucidates a subject if the Act can be given consecutively, because it is that which forms the main basis of the law, which, if a commentary is not used, is perused as it was passed. We feel Mr. Gridley's difficulty; to have put the Act in an appendix would have much increased the bulk of the book, as most of it already appears in the text. With the exception of this very important objection, Mr. Gridley's work, having regard to its aim, appears entitled to praise alone.

The Year's Art. Compiled by MARCUS B. HUISH, LL.B., and DAVID C. THOMSON. London: Sampson Low & Co.

THIS hand-book has now reached its fifth year of publication, and is certainly a very fine annual of its age. Its last year's growth has been prodigious, and it may fairly rank as the "Whitaker" of the artistic professions. It will be interesting to note what the industry of its compilers can find to add on its next issue. The only thing we can suggest is that out of 200 illustrations a few might have been devoted to the mother and mistress of all the arts. The little *fac-simile* prints, which, though of very various degrees of merit, certainly add a charm to this popular hand-book, have been taken from pen drawings lent by the artists, or at second-hand from Mr. Blackburne's "Notes." But architects now-a-days draw much in pen-and-ink, and exhibit their drawings at the Royal Academy. Are they churlish and refuse to lend their drawings? Or are their designs inartistic and unsuitable to publication? Our own opinion is that at no time for many years have our architects furnished more picturesque designs or more artistic drawings, and we have no doubt but that a selection therefrom would be found to fill quite worthily a page or two of "The Year's Art." We are the more surprised to note the present omission because the only article in the volume is a short *résumé* of the architecture of the past year; and the chief compiler of the hand-book, as editor of the *Art Journal*, always affords space in that journal for the treatment of architectural subjects. We have no space for an enumeration of the classes of information which the work comprises. It is a carefully-compiled epitome of all that an artist can desire to know about current art, and not the least of its many virtues is a capital index. It should certainly form a part of every architect's reference library.

Early and Imperial Rome. By HODDER M. WESTROPP. London: Elliot Stock.

THIS is a reprint of a course of lectures on the Archæology of Rome, which were delivered on the sites to which they severally relate, and have now in their collected form been somewhat happily named "Promenade" lectures by the author of them.

They do not contain, and do not profess to contain, anything new on this old and ever-interesting subject. The writer of them has, of course, a personal knowledge of the matter whereof he treats, an acquaintance with the topography of the Eternal City, and an enthusiastic admiration for her art and history. But his work is not in any sense original, and gives little more than a *précis* of Parker and other previous writers, largely helped by extracts from Fergusson. We are glad to note on page 55 a true view about the alleged superiority of ancient mortar, viz., that its excellence is in the main owing to its mere antiquity. In spite of a popular prejudice, it is quite certain that no better mortar was ever made than is now daily made by our builders. A collection of masons' marks on the stones forming part of the Servian wall discovered near the railway station will be welcome to collectors of those devices. The book is illustrated but sparingly by a few woodcuts, and is in sad need of a map. It is rather aggravating in the author to give us in his extracts from Fergusson that writer's letters of reference to his plan, and not to give the plan also. In the chapter on the marbles used in ancient Rome the author omits to note the fact that many of the choicest specimens came from Britain. On the whole, the book will be most valued by those who heard the lectures delivered amidst the scenes they describe, and who will find in it a pleasant *souvenir* of what was, doubtless, an agreeable archæological outing.

Harper's Magazine. January, 1884. London: Sampson Low & Co.

THE current number of *Harper*, while maintaining its reputation as a magazine of general interest, has nothing specially addressed to architects, unless the editor's plaintive moan over the disappearance of ancient buildings,—their modernisation,—throughout the whole of Europe, may be said to specially concern architects. They have, no doubt, been sinners in their time in this connexion, but they are all saints now, and the "restorer" is anathema on all sides. The works of man's hands like man himself must have an end, and we should hardly care to see a zinc shed erected over any old house for its preservation, as the Hollanders are said to have preserved a house once inhabited by Peter the Great. The poetry of the dwelling could scarcely survive such conservatism. Mr. Weller was of opinion that if death were abolished the undertakers would suffer, and we may, in the interest of architects at large, indulge in a cynical acquiescence in the decay and disappearance of at least some buildings, even if ever so old.

MEETINGS.

FRIDAY, FEB. 1.

Architectural Association.—Mr. J. D. Crace on "Coloured Decoration." 7.30 p.m.

SATURDAY, FEB. 2.

Association of Public Sanitary Inspectors (1, Adam-street, Adelphi).—Mr. F. T. Poulson on "Procedure in Dealing with Nuisances." 6 p.m.

MONDAY, FEB. 4.

Royal Institute of British Architects.—Mr. William H. White (Secretary) on "The Education and Position of Architects in France since the year 1671." 8 p.m.

Society of Engineers (Westminster Town-hall, Caxton-street, Westminster).—Mr. Arthur Rigg, President, will deliver his inaugural address. 7.30 p.m.

London Institution.—Prof. Ruskin on "The Storm Cloud of the Nineteenth Century." 5 p.m.

Society of Arts.—Mr. Thomas Bolas, F.C.S., on "Recent Improvements in Photo-Mechanical Printing Methods: Type-blocks from Line-drawings and Half-tone Subjects" (Cantor Lecture). 8 p.m.

TUESDAY, FEB. 5.

Institution of Civil Engineers.—Mr. F. R. Conder, M. Inst. C.E., on "Speed on Canals." 8 p.m.

St. Paul's Ecclesiological Society.—Mr. H. W. Brewer on "Galleries in Churches." 7.30 p.m.

Royal Institution.—Dr. Archibald Geikie, F.R.S., on "The Origin of the Scenery of the British Isles." 3 p.m.

WEDNESDAY, FEB. 6.

Society of Arts.—Mr. William Westgarth on "Suggestions for the Re-housing of the Poor, and the Re-construction of Central London." 8 p.m.

British Archæological Association.—Mr. Alfred B. Wyon, F.R.G.S., on "The Seals of Henry VI. as King of England." 8 p.m.

THURSDAY, FEB. 7.

Royal Academy.—Mr. Reginald Stuart Poole on "Ancient Egyptian Architecture." 8 p.m.

Society of Antiquaries.—(1). Mr. Edwin Freshfield, F.S.A., on "A Deed of Gift to the Brethren of the Holy Cross, Reigate"; (2). Mr. B. Edmund Ferrey, F.S.A., "Notes on the Parish Church of St. Catherine, Catherington, Hants." 8.30 p.m.

London Institution.—Mr. Norman Lockyer, F.R.S., on "The Last Two Eclipses of the Sun." 7 p.m.

FRIDAY, FEB. 8.

University College.—Prof. C. T. Newton on "The Obelisk at Xanthos." 4 p.m.

Royal Institution.—Mr. George J. Romanes, F.R.S., on "The Darwinian Theory of Instinct." 9 p.m.

SATURDAY, FEB. 9.

Architectural Association.—Visit to Houses in Harrington-gardens. (Messrs. Ernest George & Peto, architects.) 3 p.m.

Miscellanea.

Speed on Canals.—A discussion is anticipated at the meeting of the Institution of Civil Engineers, on the 5th of February, on a paper by Mr. Conder, M. Inst. C.E., on "Speed on Canals." This paper, which is to some extent a continuation of the evidence given by the author before the Select Committee on Canals, is illustrated by tables of the chronology of river and canal legislation in England, from the year 1423; by plans and details of the sizes of canal locks; and by a statement of the various speeds attained and attainable on canals, with the retardation caused by locks, lifts, or inclined planes, per foot of rise. It is also illustrated by large-sized sections of the Suez Canal, as the same was authorised by the Concession, and also as it has been actually constructed, together with sections showing how the accommodation demanded by the traffic of the world can be best provided. The writer gives mathematical rules for the loss of speed due to the restricted area of canals, and also as to the influence of depth upon the movement of vessels, whether in restricted channels or in the open sea.

Filters.—The Silicated Carbon Filter Company send us drawing and description of a filter they have just patented, the special characteristic of which is the employment of the filtering medium in the form of a flat, circular, movable block, a section of a cylinder, fitting inside the chamber of a cylindrical stoneware filter, on a metal supporting frame, which can be lifted out in a moment whenever it is desired to change the block of filtering carbon for a new one. On lifting out the block, the whole interior of the filter chamber becomes exposed, and can be inspected and cleaned if necessary. The invention seems a very useful one for rendering it easier to change and clean the filter and keep it in that purity of condition without which a filter is worse than useless. Square carbon blocks are supplied, when required, with the filter. The carbon, it may be observed, is made impervious to water at its top and sides, so that the water is forced in at the bottom and made to take a longer and more circuitous course through the filtering medium than if it only filtered vertically through.

A New Public Hall at Clapham.—Opposite the Clapham Station of the London, Chatham, & Dover Railway, in Gauden-road, a new public hall is nearly completed. From the main entrance in Gauden-road a corridor, 6 ft. in width, leads into a spacious reception-room, whence access is gained to the hall itself, which is octagonal in form and about 60 ft. in diameter, containing a ground area of upwards of 3,000 superficial feet. It is 25 ft. in height from the floor to a handsome coved ceiling, supported by ornamental iron columns. In the centre of the ceiling there is a spacious lantern, the hall being also lighted by windows on the east side. At the west end there is a stage or platform occupying the entire width of the area, retiring and dressing rooms being provided immediately under it. The hall, which will seat about 600 persons, has been erected from plans by Mr. Bamford, architect, Camberwell.

The Late Dean of Windsor.—A handsome memorial has just been erected at Chertsey Cemetery in memory of the late Dean Connor, Chaplain to her Majesty the Queen. It is executed in marble, and is in the form of an Irish cross, carved on the front with the eucharistic lily, palm, and a wreath of laurel. The work has been executed by Messrs. Underwood & Sons, of Duke-street, Grosvenor-square.

Croydon.—Alterations and additions are proposed to be made at the Brighton-road schools to accommodate about 300 more children, making a total accommodation for 846. A large portion of the fittings will be dual desks. The architects are Messrs. Berney & Monday, of Croydon.

A Large Clock has just been erected in Hammerwich Church, near Lichfield, by Messrs. John Smith & Sons, Derby. It is fitted with all the latest improvements, strikes the hours, and has one 4-ft. dial. The same firm are making a turret clock for a mission church at Norfolk Island.

The Stone for the New War Offices.—On this subject, on which a correspondent made some suggestions last week, we have received some interesting and important letters, which, for want of space, we have been obliged to defer to next week.

Proposed Exhibition at Buda-Pest, 1885.—In connexion with the "General National Exhibition" to be held at Buda Pest next year, under the auspices of the Hungarian Government, it has been determined (in consequence of the limited character of the Exhibition, which is intended to produce as complete and faithful a picture as possible of the productions and handiworks of Hungary) to organise simultaneously a separate International Section for motors and working machines, tools, and implements for artisans, and agricultural machinery and appliances of all kinds. The General Commission have been induced to take this step because, to use their own words,—

"The greatly improved means of communication, and the great increase of international intercourse, have exposed Hungary to the competition of the more advanced foreign industry; on the other hand, a very important tendency has appeared, for raising industrial establishments on a very large scale, by the more intensive application of the powers of nature, and a more extensive employment of the principle of division of labour, which tendency is thrusting the smaller artisans rapidly into the background. With regard to the wholesale production of cheap manufactured goods, not only is it a pressing necessity, but perhaps the most important problem of the political economy of our times, to find ways and means of saving the smaller industries from certain extinction, to preserve and advance the material welfare of craftsmen, by enabling them to fill up the place in the circle of industrial productions which the large manufacturing establishments, wanting in individual character, and bent on only wholesale production, are unable to occupy. In order to solve this highly important question of political economy, it is essentially requisite to put into the hands of intelligent and assiduous craftsmen such motors or perfected working machines and tools as are at the disposition of the wholesale producer, or that the methods and implements used by the wholesale producer may be so modified as to be used by handicraftsmen, and put into motion as easily and cheaply as by the wholesale manufacturer."

The General Regulations for the International Section of the Buda-Pest Exhibition (which is to be opened on May 1, 1885) may be had from the Office of the Special Committee, Budapest, Hungary.

Builders' Clerks' Benevolent Institution.—A special general meeting of the donors and subscribers of this institution was held at the office, 27, Farringdon-street, on Tuesday evening last, Mr. J. Howard Colls, president, in the chair, when John T. B. Miles, the only eligible candidate, was duly elected by show of hands as a pensioner on the relief fund. The committee afterwards, at Mr. Colls's invitation, adjourned to partake of supper. During the evening, Mr. E. C. Roe, on behalf of those present, acknowledged the services rendered by Mr. Colls to the charity, and concluded by proposing his health. The president, in reply, expressed the pleasure he felt at meeting the members of the committee, and of the satisfaction it had afforded him to be associated with them in the work of assisting so good an institution, and referred especially to the presence of Mr. T. F. Rider, of whom he spoke as having been a most active president, and as he might say the "resuscitator" of the Institution. Mr. Rider in reply said, he was very pleased to be present to meet the president, who was a worthy son of a former worthy president (alluding to the late Mr. Benjamin Colls). He also referred to other presidents who had rendered good service to the charity, speaking especially of Mr. Taprell Holland and Mr. Stanley Bird. He also expressed the hope that more of the builders clerks' themselves would join so excellent an institution, which was founded especially for their benefit.

Society of Engineers.—The first ordinary meeting of this Society for the year 1884 will be held on Monday next, at the Westminster Town Hall, Caxton-street, Westminster, when the statement of accounts for 1883 will be read; the president for 1883, Mr. Jabez Church, will present the premiums awarded for papers read during that year; and the president for 1884, Mr. Arthur Rigg, will deliver his inaugural address.

Nottingham Municipal Buildings Competition.—It appears that we were not technically correct in describing Messrs. Verity & Hunt's design as "accepted." It was "unanimously recommended" for execution by the Committee. The Corporation postponed the further consideration of the whole subject on grounds, as we understand, apart from the merit of the design.

The Constant Water Supply Question in St. Pancras.—A crowded meeting was held on Tuesday evening last, the 29th ult., in reference to the expensive demands of the New River Company, some particulars of which were given in our last number. Mr. Westacott took the chair, and gave an interesting account of the correspondence between the Vestry and the water company, contending that the Company's requirements were totally unnecessary, arbitrary, and at variance with the powers of their Act. He estimated that the cost of carrying out the requirements would be 10,000*l*. Mr. Robinson, who in the vestry had advocated the constant supply, considered the New River Company had not fulfilled their part of the contract, for, having compelled each house to be fitted with every appliance that was deemed necessary two or three years ago, they had not sent in the constant supply, and now turned round and demanded further outlay. He contrasted the conduct of the West Middlesex Company with that of the New River Company, one of the wards of the parish having had the constant supply from the former company without any of the vexatious expense or irritation to which the other parts of the parish were subject. Other speakers addressed the meeting, and eventually a deputation was appointed to confer with the Vestry, and wait upon the directors of the water company to induce them to withdraw or modify their requirements. In the meantime it was agreed that no steps be taken to comply with their demands.

Electrical Engineering.—The fourth of a course of lectures on "Electrical Engineering," by Mr. J. C. Fell, was delivered on the evening of January 28, in the reading-room of the Society of Engineers, Victoria-street, Westminster, Mr. Jabez Church, past-president, in the chair. The lecturer again resumed the description of the principles on which the generation of currents is obtained from dynamo-electrical machines, giving large scale illustrations of the various methods in which the armature coils may be wound. He then explained in comparative detail the distinctive characteristics of the best known dynamo machines, such as the Gramme, the Siemens, and the Edison machines, which were illustrated. Mr. Fell then proceeded with definitions of the laws of circuit resistances directly proportional to length and to sectional area of conductor, and gave some interesting examples of electric arc lamps, dating back as early as 1816. The defects in these lamps for practical lighting purposes were pointed out, and the steps of invention effecting mechanical improvement thus explained.

Manchester.—The trustees of the Manchester and Salford Savings Bank are now erecting a new branch bank in the Oldham-road on a site a little more than a mile from the head office in Booth-street, Manchester. Of the old buildings on the ground, a portion has been pulled down to make way for the new bank; and the remainder is being adapted for a care-taker's residence. The material for the bank-room is brick outside and in, with stone dressings, a superior and costly description of brick being used for the interior. An open arcaded winding staircase leads from the bank to the book-room in the basement and up to a gallery, where, screened from observation, yet within ear-shot and eye-shot of the depositors, a clerk may retire for his luncheon or tea. The bank is expected to be ready for occupation and business by Midsummer next. Mr. Thomas Scott is the contractor, working under the direction of the architects, Messrs. Medland & Henry Taylor.

St. Paul's Mission Hall, Surrey Gardens, Walworth.—The above Hall, for the Rev. Evelyn F. Alexander, Chaplain to the Bishop of Rochester, in connexion with St. Paul's, Lorrimore-square, was opened by the Bishop of Rochester on the 24th ult. The building will seat about 800 adults, and has cost 2,400*l*., including heating apparatus, gas fittings, reversible seats, wood block floors, &c. The builders are Messrs. H. Burman & Sons, of 37, De Laune-street, Walworth, and the architects Messrs. Romaine-Walker & Tanner, of 19, Buckingham-street, Adelphi.

Notice of Removal.—Mr. James Hill, whose lock furniture has long been in such high repute in England and in many parts of the Continent, is removing this week from Upper Thames-street to new premises, at 100A, Queen Victoria-street.

Building Improvements in the "New Cut," Lambeth.—A new building is being erected in the Lower Marsh, otherwise the "New Cut," Lambeth, for Mr. Grove, clothier and outfitter. It has a frontage to Lower Marsh of 83 ft. in length, with a return frontage to Robert-street of 60 ft. The height of the building from the pavement line to the cornice is 60 ft., and to the ridge of the Mansard roof 75 ft. It contains five floors, the upper floor having ornamentally carved pediment and arched dormers. The elevations are of white Suffolk brick and Portland stone, with terra-cotta bands carried across the frontages immediately under the dormers. The ground and first floor of the building contain spacious show-rooms, each having an area of nearly 5,000 superficial feet. The estimated cost of the building when completed is about 10,000*l.* A portion of the structure is already finished and opened. Mr. Vicars, of Addle-street, City, is the architect, and Mr. E. Lawrence, of the City-road, is the contractor.

The Heating and Ventilation of the German Parliament House.—Competition is invited for plans for warming and ventilating the new buildings of the German Reichstag. Foreigners, however, need not trouble themselves in the matter, for the competition is confined to German sanitary engineers. A sum of 10,000 marks has been set apart for premiating the three best designs. The plans of the successful competitors become the property of the State.

TENDERS.

For stabling at High-street, Bromley, for the London General Omnibus Company. Mr. J. T. Lanham, superintendent of works:—

Raynor	£4,750	0	0 !
Gregar	3,840	0	0
Jackson & Todd	3,699	0	0
Lake & Co.	3,528	0	0
Hack	3,344	0	0
Foster & Dicksee	3,333	0	0
Haynes	3,250	0	0
Shurmur	3,249	0	0
Bolding	3,237	0	0
Smith	3,212	0	0
Richardson & Munt	3,112	0	0
Walker	3,077	0	0
Brickall	3,030	0	0
Evans	3,025	0	0
Howell & Son	3,000	0	0
Parker	2,979	0	0
Garrad	2,831	0	0
Scharien & Williams	2,815	0	0 !

For the erection of new schools and office at Trafalgar-square, Stepney, for the School Board for London. Mr. E. R. Robson, architect:—

Harris & Wardrop	£15,550	0	0
Scrivener	14,940	0	0
Bangs	14,899	0	0
Patman & Fotheringham	14,765	0	0
T. Boyce	14,750	0	0
W. Johnson	14,730	0	0
C. Wall	14,621	0	0
C. Cox	14,499	0	0
Kirk & Randall	14,470	0	0
Atherton & Latta	14,300	0	0
Perry & Co.	14,157	0	0
J. Smith & Son	14,154	0	0
W. Brass	14,134	0	0
G. S. Williams & Son	14,111	0	0
S. J. Jerrard	13,989	0	0
Wall Bros.	13,934	0	0
Mark Gentry	13,917	0	0
F. & F. J. Wood	13,669	0	0
W. Shurmur	13,590	0	0

For bank premises at Ventnor, Isle of Wight, for the Capital and Counties Bank. Mr. Theodore R. Saunders, architect. Quantities by the architect:—

J. Crook, Southampton	£3,797	0	0
T. Jenkins, Newport, I.W.	3,550	0	0
A. Daish, Ventnor	3,500	0	0
G. Hayles, Shanklin	3,267	0	0
H. Ingram & Sons, Ventnor	3,180	0	0
J. Newnham, Ventnor	3,120	0	0
Sims & Rowsell, Ventnor	3,100	0	0
Silsbury & Kingswell, Ventnor	2,906	0	0
Isaac Barton, Ryde	2,749	0	0
Drudge & Wheeler, Ventnor*	2,735	0	0

* Accepted.

For additions and repairs to Tin Works, 27, Freeman-street, Birmingham. Mr. Edgar Farman, architect and surveyor, 5, Great James-street:—

William George (accepted)	£150	0	0

For reinstating premises, for Messrs. Culmer & Son, Hornsey-road. Mr. J. Farrer, architect and surveyor:—

Wilkinson Bros.	£69	10	0
Southcott & Co.	59	17	6
J. Harper	57	10	0
Gibbs & Imber	57	9	0

For works in erection of offices, Crouch End Station:—

Southcott & Co.	£195	0	0
Gibbs & Imber	175	7	6
Wilkinson Bros.	159	0	0
Morland & Co.	145	0	0

For alterations to the Egyptian Hall, Piccadilly. Mr. James Geo Buckle, architect:—

Lucas & Son	£1,280	0	0
D. Laing & Son	1,087	0	0
Whiteley	999	0	0
Seachfield & Son (accepted)	940	0	0

For the erection of the superstructure* of Cannon-street buildings, Cannon-street and Abchurch-lane. Mr. Geo. Sherrin, architect. Quantities by Messrs. Franklyn & Andrews:—

Conder	£42,840	0	0
Lovatt	39,870	0	0
J. & J. Greenwood	37,783	0	0
Rider & Son	37,660	0	0
Dove Bros.	36,595	0	0
Lawrence & Son	36,512	0	0
Bywater	36,337	0	0
Ashby & Horner	36,270	0	0
Holland & Hannen	35,813	0	0
Perry & Co.	35,808	0	0
Peto Bros.	35,741	0	0
Ashby Bros.	35,528	0	0
Brass	35,333	0	0
Kirk & Randall	33,332	0	0
Chappell	32,884	0	0

* The basement and sub-basement have been carried out by Messrs. Holland & Hannen.

For underpinning walls, and building in of iron bressumers for new lights, and excavating for new basement, offices, and areas, and various alterations at 7, Angel-court and Throgmorton-street, for Mr. R. S. Gregson. Messrs. Geo. Barnes Williams, Frederick's-place, Old Jewry, and E. A. Grüning, architects, Gresham House:—
Howell J. Williams, Bermondsey-street
(accepted at schedule of prices).

For erecting villa-residence, Queen's-road, Wimbledon, for Mr. J. E. B. Pead. Mr. S. B. Grosvenor, architect, No. 23, Southampton-buildings, Holborn:—

Craske	£863	0	0
Burman & Sons	834	0	0
Oldis Bros.	826	0	0
Johnson	825	0	0
J. Anley (accepted conditionally)	820	0	0

For extra work in laying surface-drains, and kerbing New-road, South Wimbledon Estate, for the directors of the Birkbeck Freehold Land Society. Mr. S. B. Grosvenor, surveyor:—

Pound (accepted)	£225	0	0

For alterations at the Albion Hotel, Ludgate-circus, for Mr. T. Parker. Mr. H. I. Newton, architect:—

Royal	£635	0	0
Canning & Mullins	605	0	0
Beale	590	0	0
Mills	590	0	0
Godden	575	0	0
Cook (accepted)	571	0	0

For alterations and repairs at the Corner Pin, St. Martin's-lane, for Mr. C. Deakin. Mr. Arthur W. Saville, architect. Quantities supplied:—

Royal (accepted)	£345	0	0
Pewterer's Work.			
F. J. Ruse	£54	0	0
Watts & Co.	48	7	0

For the extension of pavilion for the Matlock Bath Pavilion and Garden Company, Limited, at Matlock Bath. Mr. John Nuttall, architect, Matlock. Quantities by Mr. F. S. Smith, St. Anne's-square, Manchester:—
Chadwick & Co., Rotherham (accepted) ... £1,250

For the erection of Wesleyan Chapel and schools at Cleethorpes, Great Grimsby, Lincolnshire. Mr. Chas. Bell, architect. Quantities by Mr. Henry Lovegrove, No. 26, Budge-row:—

Hobson	£5,989	0	0
Mills	5,906	0	0
Spencer	5,678	0	0
Mashford	5,647	0	0
Holmes	5,095	0	0
Grant & Co.	4,983	0	0
Baines	5,000	0	0
Snowden	4,886	0	0
Fletcher	4,817	0	0
Thompson	4,400	0	0

For new schools, for the Brighton and Preston United District School Board, Circus-street, Brighton, for 700 children. Mr. T. Simpson, architect, Ship-street, Brighton:—

Bruton, Brighton	£6,790	0	0
Cheesman & Co, Brighton	6,380	0	0
Stimpson & Co., London	6 286	0	0
Longley, Crawley	6,340	0	0
Webber & Co., Hove	6,234	0	0
Brown, Burgess Hill	6 205	1	0
Peters, Horsham	6,025	0	0
Wright, Brighton	5,996	0	0
Cresswell, Hove	5,974	0	0
Hudson, Kearley, & Co., Brighton	5,932	18	9
Reynolds, Jun., Hove	5,820	0	0
Taylor, Brighton	5,760	0	0
W. & G. Davey, Brighton	5,698	0	0
Dean, Brighton	5,670	0	0
Charlwood Bros., East Grinstead	5,245	0	0

For the erection of new schools and offices at Colls-road, Peckham, for the School Board for London. Mr. E. R. Robson, architect:—

Turtle & Appleton	£12,604	0	0
W. Sheppard	12,318	0	0
W. Tongue	12,280	0	0
J. Grover	12,267	0	0
W. Scrivener	12,250	0	0
J. Marsland	12,247	0	0
Patman & Fotheringham	12,212	0	0
Lathey	12,200	0	0
W. Brass	12,194	0	0
Bangs	12,190	0	0
Kirk & Randall	12,147	0	0
Hy. Hart	12,140	0	0
C. Wall	12,090	0	0
Wall Bros.	12,085	0	0
W. Downs	11,987	0	0
W. Shurmur	11,970	0	0
Stimpson	11,910	0	0
Jas. Smith & Son	11,764	0	0
S. J. Jerrard	11,689	0	0
W. Johnson	11,428	0	0

For the erection of house in Addison-road, Kensington. Mr. Edward Monson, Jun., architect, Grosvenor House, The Vale, Acton:—
Scharien & Williams, South Kensington* £2,294
* Accepted.

For the erection of a block of buildings for aged and infirm inmates, on the Cook's-terrace site, adjoining the workhouse, for the Guardians of the Poor of the Parish of St. Pancras. Mr. H. H. Bridgman, architect, 42, Poultry, Quantities by Messrs. Sandall & Corderoy, and Mr. W. T. Farthing:—

H. Hart, Great Dover-street	£36,852	0	0
Longmire & Burge, St. Pancras	34,990	0	0
G. Shaw, Westminster	34,335	0	0
Higgs & Hill, Lambeth	34,260	0	0
W. D. Fink, Grays-Inn-road	34,085	0	0
J. Joselyne, Borough	33,990	0	0
J. T. Chappell, Pimlico	33,662	0	0
Lucas & Son, Kensington	33,227	0	0
Mowlem & Co., Westminster	32,945	0	0
Steed Bros., St. Pancras	32,898	0	0
Perry & Co., Bow	32,848	0	0
B. E. Nightingale, Lambeth	32,725	0	0
E. Toms, St. Pancras	32,634	0	0
E. C. Howell & Sons, Lambeth	32,550	0	0
C. Killingback, St. Pancras	32,297	0	0
T. Boyce, Hackney	32,140	0	0
R. S. Lamble, St. Pancras	32,000	0	0
Foster & Dicksee, Rugby	31,999	0	0
W. Scrivener & Co., St. Pancras	31,981	0	0
J. Woodward, Finsbury	31,645	0	0
W. Shurmur, Clapton	31,590	0	0
J. & J. Greenwood, City	31,573	0	0
M. Manley, St. Pancras	31,327	0	0
Wall Bros., St. Pancras	30,973	0	0
Kirk & Randall, Woolwich	30,720	0	0
W. Brass, City	30,597	0	0
E. Lawrence & Son, City-road*	30,448	0	0

* Accepted subject to references, &c.

For the Aula Maxima for the joint use of the Episcopal Residence and Seminary in Edinburgh-road, Portsmouth, for the Rev. Dr. Virtue, R.C. Bishop of Portsmouth. Mr. Joseph Stanislaus Hansom, architect, 27, Alfred-place West, South Kensington. Quantities by Mr. Henry Smith, 8, John-street, Adelphi:—

Patman & Co.	£2,652	0	0
W. Newman	2,490	0	0
Burbridge	2,455	0	0
R. & E. Evans	2,450	0	0
J. Butt	2 408	0	0
J. Tyerman	2,385	0	0
W. Ward	2,373	0	0
Light Bros.	2,298	0	0

For making up Alroy-road, Finsbury Park, for the Hornsey Local Board. Mr. T. de Courcy Meade, surveyor:—

Dunmore, Crouch End	£213	9	6
Pizzey, Hornsey	195	0	0
Jackson & Son, Finsbury Park	186	0	0
Strachan, Wood Green	174	13	9
Salamon & Co., Harrow-road	170	0	0
W. T. Williamson, Green Lanes	159	0	0
G. Impey, Leytonstone (accepted)	147	17	8

For erecting iron roofs, &c., for the Alum and Ammonia Company, at their works, Atlantic Wharf, Bow. Mr. E. W. Mountford, architect:—
F. Morton & Co., Liverpool* £1,634 0 0
* Accepted.

For the erection of a block of school buildings for 965 children, caretaker's residence, and appurtenances, on a site at the Custom House, for the West Ham School Board. Mr. J. T. Newman, architect. Quantities supplied by Metsrs. Curtis & Sons:—

G. J. Hoskings	£10,096	0	0
J. Cattley	9,998	0	0
W. Gregar	9,960	0	0
Hearle & Son	9,594	0	0
J. Holland	9,570	0	0
J. Brickell	9,440	0	0
J. J. Robson	9,427	0	0
E. Stafford	9,283	0	0
Magee & Co.	9,195	0	0
D. D. & A. Brown	9,160	0	0
J. G. Horlock	9,115	0	0
B. E. Nightingale	9,068	0	0
E. H. Hunt	9,065	0	0
J. Parfitt	9,021	0	0
C. Cox	8,989	0	0
A. Reed	8,877	0	0
Priestley & Gurney	8,700	0	0
Howell & Son	8,314	0	0
North Bros.	8,150	0	0
J. W. Hobbs*	7,869	0	0

* Accepted subject to approval by the Education Department.

For business premises, stabling, &c., for Messrs. H. & G. Dutfield, Upper East Smithfield. Mr. J. Butterworth, architect:—

C. Sharpe	£7,500	0	0 !
J. Garlick	6,900	0	0
Foster & Dicksee	5,000	0	0
Harris & Wardrop	4,994	0	0
B. T. Wood	4,829	0	0
S. Blow	4,700	0	0
E. Stafford	4,659	0	0
D. King & Son	4,537	0	0
Scharien & Williams	4,432	0	0
Perry & Co.	4,429	0	0
Parker	4,330	0	0
Ford & Everett	4,300	0	0
W. J. Hack	4,299	0	0
J. Outhwaite	4,193	0	0
W. Marriage	4,150	0	0
Jackson & Todd	4,090	0	0
Bolding	4,087	0	0
H. T. Dye	4,035	0	0
W. Shurmur	3,960	0	0
Gibbons	3,950	0	0
Howell & Son	3,923	0	0
Garrad	3,879	0	0
G. White	3,848	0	0 !

For the erection of a truant school at Fyfield, near Ongar, Essex, for the West Ham School Board. Mr. J. T. Newman, architect, No. 2, Fen-court, Fenchurch-street. Quantities supplied by Messrs. Curtis & Sons:—
J. W. Hobbs (reduced estimate)* ... £7,778 0 0
* Accepted.

For the erection of a villa residence, Otley-road, Esholt, near Bradford. Mr. R. F. Rogerson, architect and surveyor, Brighouse:—

Masons.

Baxter & Whitfield, Idle, near Bradford	£244 15 0
T. Obank & Co., Idle	290 0 0
J. North & Sons, Idle	249 0 0
E. Cordingley,* Thackley, Idle	240 0 0

Joiners.

T. Obank & Co., Idle	173 0 0
James Deacon,* Shipley, near Bradford	149 10 0
Cryer Bros., Shipley	149 10 0
James Taylor & Sons, Yeadon	154 0 0

Plumbers and Glaziers.

Samuel Rushworth, jun., Shipley, near Bradford	59 10 0
John Brook, Heckmondwike	70 10 0
Joshua Lockwood, Guiseley	54 13 5
Joseph Lawson,* Brighouse	60 0 0

Plasterers.

Simeon Laycock, sen., Bradford	38 15 0
Stocks & Bates, Bradford	38 6 0
Samuel Sugden, Manningham, near Bradford	44 0 0
A. & S. Wheater,* Calverley, near Leeds	37 0 0

Slaters.

Samuel Smithies,* Bradford	36 10 0

For all the work.

T. Obank & Co., Idle, near Bradford	610 0 0

* Accepted.

For rebuilding premises, No. 28, Blackheath-road, for Mr. E. T. Bailey. Mr. A. H. Kersey, architect, 21, Finsbury-pavement:—

Tyerman	£1,051 0 0
Burman	890 0 0
Best	814 0 0
A. & F. Smith	798 12 0
Holliday & Greenwood	757 0 0
Bush	749 0 0
H. L. Holloway, Queen's-road, Newcross (accepted)	727 0 0

For new dairy premises, Tunstall-road, Brixton, for Messrs. Nash & Stevens. Messrs. Fowler & Hill, architects:—

Pack Bros. (accepted)	£515 0 0

[No competition.]

For two houses and shops, Brixton-road, for Mr. Earle Bird. Messrs. Fowler & Hill, architects:—

Pack Bros. (accepted)	£2,630 0 0

[No competition.]

For 1,300 tons of granite, &c., for the Finchley Local Board. Mr. Geo. W. Brumell, surveyor:—

	Description (broken).	Amount per ton delivered on road. s. d.
H. F. Brooks, Finchley	Bardon Hill*	12 10
J. Mowlem & Co.	Stoney Stanton	12 6
"	Mount Sorrell	13 6
"	Croft	12 9
"	Bardon Hill	13 3
"	Markfield	13 9
Nowell & Robson	Enderby	13 8
A. & F. Culverhouse	Guernsey	15 6
"	Kentish Rag	11 6
"	Groby	15 0
Fardell	Slag†	9 0
"	Chalk flints	11 0
"	Diamond granite	14 5
"	Prince's granite	16 1
"	Bardon Hill	14 0
"	Guernsey	17 0
Brooks & Co., Finchley	Leicester*	12 4
" "	Slag	11 3
Manuelle & Co.	Leicester	13 6
"	Guernsey	15 9
Field & Mackay	Clea Hill	15 6
Ellis, Partridge, & Co., Leicester	Stoney Stanton*	12 0
J. S. Gabriel	Kentish Rag	12 0

* Accepted 400 tons each. † Unbroken.

For alterations at the Canterbury Theatre of Varieties. Mr. Frank Matcham, architect:—

Dove Bros.	£2,105 0 0
Patman & Fotheringham	2,028 0 0
Wall Bros.	2,025 0 0
Bangs	1,982 0 0
Patrick & Son	1,969 0 0
Shurmur	1,710 0 0
Ford & Everett	1,585 0 0

For re-erection of premises in Copthall-court, Throgmorton-street, for Mr. C. J. Durant. Mr. E. A. Gruning, architect. Quantities by Messrs. H. Blackwell & R. Griggs:—

Holland & Hannen	£17,463 0 0
Clarke & Bracey	17,350 0 0
Colls & Sons	16,400 0 0
Kirk & Randall	16,238 0 0
E. Lawrence & Sons	15,889 0 0
W. Brass	15,792 0 0
B. E. Nightingale	15,772 0 0
J. Mowlem & Co. (accepted)	15,590 0 0

Errata.—Mr. Henry Lovegrove was, by a printer's error in our last (p. 150), described as "architect" for the extension of the iron roof of Spitalfields Market. He should have been mentioned as "surveyor." On the same page, in the list of tenders for Town and County Club buildings, Bedford, for "Botterill, Luton," read "*Bunn*, Luton"; and for "Hull, Cambridge," read "*Mills*, Cambridge." These mistakes are not ours, as the list was printed as received.]

Special Notice.—Lists of tenders frequently reach us too late for insertion. They should be delivered at our office, 46, Catherine-street, Strand, W.C., not later than four p.m. on Thursdays.

TO CORRESPONDENTS.

C. F. H.—C. & Co.—H. G. B.—W. S. C. B.—G. W. (your note forwarded).—S. W.—W. M. P. & Co. (see "standing orders" below).—H. R. G.—C. R. (it would probably amount to an abandonment of the right, but might become a question for a jury in case of dispute).—Archado (no name or address given).—R. W. S. (plans in *Builder* June 20th, 1874).—H. D.—J. C. K. (ingenious, but not very practical: it would much increase the first cost of drain-pipes and difficulty of laying, and its efficiency seems open to question).—A. D.—W. G. (under consideration).—C. N. M. N.—H. A. D. (many thanks, but too late to be dealt with this week).—Inquirer (precisely the same pressure when both cisterns were full. When both are run out as far as the level of the pipe head allows, then D would be under heavier pressure, having the longer column of water).—S.V. (next week).

Correspondents should address the Editor, and *not* the Publisher, except in cases of busines.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

Note.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

PUBLISHER'S NOTICES.

THE INDEX and TITLE-PAGE for Volume XLV. (July to December, 1883) were given as a Supplement with the number of January 12, and A COLOURED TITLE-PAGE was issued the following week, in substitution for that published previously.

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